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Farm Department.

Conducted by J. H. Brown, who lives on his farm at Climax, Mich., which is conducted as the Michigan Farmer Experiment Farm. All correspondence for this department should be sent to Climax, Mich.

PURE WATER ON THE FARM.

The Cistern and The Filters.

If I can make plain to those who do not understand it how to secure the very purest and best water, I will have made the most valuable contribution to their comfort and health and happiness that it is possible for me to make. While I do not underestimate the value of good information about weed destruction, tile drainage, soil fertilizing, the production of milk and butter of the choicest flavor from ensilage and so on; yet I believe the information that makes it practicable to supply every home with an abundance of cold, clear, pure, "sparkling water," safe from the contamination of disease germs, is the most valuable information of all.

It is essential that the water be cold; not only for luxury and comfort, but for purity. If the water is warm the slightest trace of organic or nitrogenous matter in solution causes fermentation and a bad taste. In the ordinary cistern, near the top of the ground, the water is impure, partly because it is warm and insipid. In the drawings I have made, Fig. 1 shows the cistern well down in the earth, mainly beyond the reach of summer heat. Such a cistern eight or nine feet in diameter and the body ten or twelve feet deep will hold from one to two hundred barrels, and with ample roofs may be filled during the late fall, winter and early spring rains and snows, when the roofs and gutters are cleanest and the water coldest and purest, after which the leader may be disconnected and the warm summer rains run off in the waste pipe.

Another essential is that the water shall be "soft." And here I must correct a popular error to the effect that water is "hard" because lime is in it. On the contrary a little "quicklime" will make hard water soft. The chemistry of carbon is involved in the explanation of hard water, and this I have carefully studied.

It is not the lime that makes water hard but some acid, generally carbonic acid, and although limestone contains 44 percent by weight of carbonic acid gas in combination, yet neither limestone nor waterlime cement, after it is carbonated, can give off any acid to make water hard.

There are two ways in which the water in a cistern may become hard. First, when the cistern is newly built the cement contains a trace of free caustic lime which dissolves in the water. This limewater in turn absorbs an excess of carbonic acid gas from the air, forming a soluble "bicarbonate" or "acid carbonate" of lime. Now the soda or potash of soap combines with the excess of carbonic acid the instant it touches it, and the rejected grease of the soap, together with the insoluble lime-carbonate, stick to the fingers like wax and so we say the "water is hard."

The second way in which water even in an old cistern may become hard is by fermentation. Everybody knows about the effervescence or foaming up of carbonic acid gas in the fermentation of beer, wine, cider, etc. It is surprising how small a trace of fermentable matter, such as the juices of leaves, wood, etc., will cause water to "work," as sailors call it. When such fermentation takes place in a cistern, the free carbonic acid produced dissolves a portion of the lime-carbonate of the cistern wall,

and the carbonate so formed remains in solution and makes the water hard.

But the charcoal filter shown in Fig. 1, and a little care in keeping leaves, etc., out of gutter tanks and so on through which the water has to pass on its way from the roofs to the cistern will so completely remove all nitrogen-

and M the top of the ground shown in section by diagonal lines. In the horizontal section, Fig. 2, like letters refer to like parts.

We have passed by two or three vital things. The joint which the flooring B makes with the outside of the cistern top should be open (or cleated) on the

ders, earthworms and other vermin may crawl through and fall into the water. The cleats to which the platform A fits are slightly beveled and nailed down to the floor in fat paint, so that the cleat or base of the platform O makes a bug-and-water-proof joint as shown at O J. The end of J is shown black.

It will be noticed that the cistern changes from round to square at the top, and the flooring and platform are put together at the matching with fat paint to close all cracks leading into the cistern. This work might be better if made of heavy galvanized iron.

The waste pipe H may lead into the cellar drain, but at the lower end (not shown) it dips into a jar or kettle always full of water which serves as a "gas and vermin trap." Now if, in addition to the above precautions, the pump curb and its joint over the opening through the platform (not shown) are secure against such insects as are tolerated in the cistern room, the water in the cistern is secure against all contamination of organic matter. Down in the dark and cold there can be no bacteria, no chemical action—because nothing for either to act upon—and the water will be more pure than "the purest mountain spring."

If the charcoal filter is, say, 24 feet square it will hold several bushels and will do good work three or four years without renewing. There is a galvanized iron strainer at G, the filter is two-thirds full of charcoal, fine towards the top, the other third on top coarse washed river sand.

The charcoal filter as shown in Fig. 1 is too near the joists and floor D, B, to allow removing cover, refilling, etc. In the horizontal section, Fig. 2, the filter L is shown further away and connected by the pipe G. But, if it is out of doors, a galvanized iron cover must project and turn down over the brickwork to protect from rain and snow. E, F, is made frost-proof by filling with dry charcoal powder, and "banking up."

The partition brick filter K, made of moderately soft brick, is arched as shown in Fig. 2 to resist the pressure before the heavy rains have time to filter through. It is very important that the cement in which the bricks are laid should be rich, fine and soft—not more than two of sifted sand to one of cement—so that the ends and edges of the bricks may be perfectly joined together. If the cement is mixed coarse and thick, and the bricks laid dry, as I have seen done, the cement will not adhere at all points, there will be cleavage cracks between brick and cement, in places the water will come through almost in streams and it is no filter. Most of the brick filters I have seen have been failures from this cause. One man actually drilled a hole near the bottom of his partition filter to "make the water come through faster." To prevent cleavage I wet the bricks thoroughly before laying. Of course the waste pipe H, Fig. 2, must be lower than the top of this partition filter, so that no unfiltered water can overflow into compartment of the pump, C.

In regard to laying the cistern wall, for the bottom and perpendicular wall to where the neck begins, at N, I make the concrete of cement and coarse river gravel, and as I lay it I press into it seasoned cobble, broken stone, or brick-bats, to quickly absorb the water and make the concrete "set" at once, making sure that the mortar fills solidly against the earth outside. Instead of board or metal form to fill behind, the curved plasterer's trowel may be held against the work with the left hand, while the concrete is thrown behind with the "spoon-shaped" trowel round in the right; and so round and body in shallow courses. To build the of brick is needless expense; but, if bricks are used they must be laid and backed solid in cement mortar. The worst cases of broken and cracked cis-

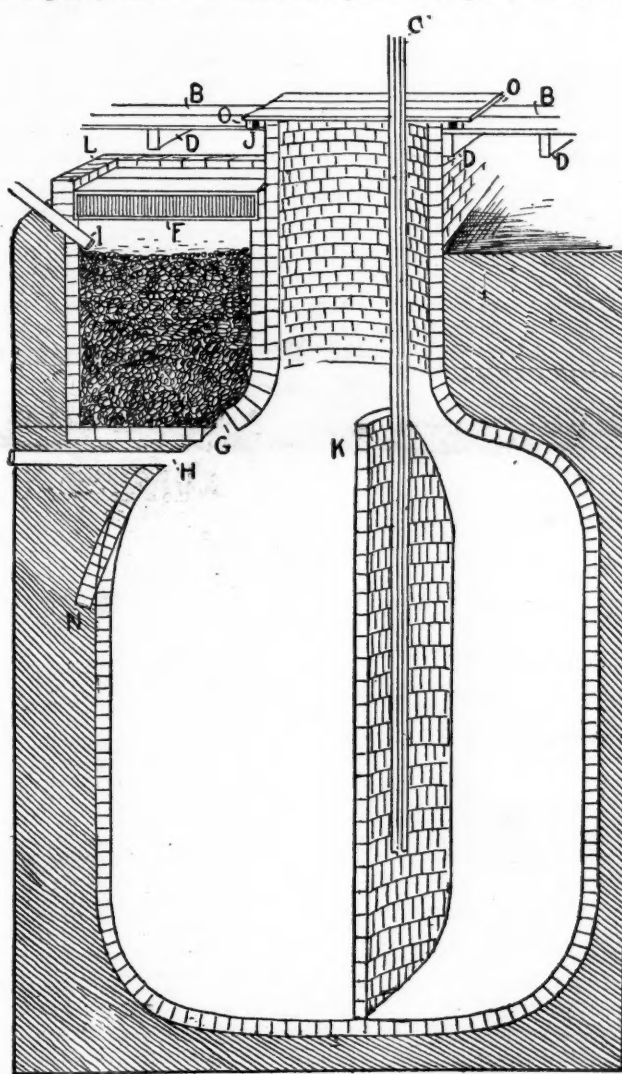


FIG. 1.—PERPENDICULAR SECTION OF CISTERN.

ous and fermentable matter that the water will not "work," especially if cold, as above described.

Charcoal has the power not only of filtering out the solid impurities, but those in solution, gases as well as liquids. It will absorb, for instance, ninety times its volume of ammonia gas and the impure gases composed of sulphur, hydrogen and so on in similar large proportions.

The shape and proportions of the cistern must to some extent depend upon the situation, but if the ground is free from water veins to a sufficient depth, the form shown in Fig. 1, which is that of one I built for myself about thirty years ago, is a good one. Fig. 1 is a perpendicular section cut down through the platform, floor, charcoal filter and its double cover, neck and body of cistern and its brick partition filter.

D are the joists of the cistern room floor, B the floor, A the platform, C part of the pump tube. L is the top of the charcoal filter, E and F are the top and bottom of the filter cover to prevent freezing in winter. I shows the situation of the leader pipe out of the way of said cover. G is the pipe or aperture which leads the water from the filter into the body of the cistern. H is the waste pipe, K the brick partition filter

upper side and filled with soft putty and occasionally inspected to see that it re-

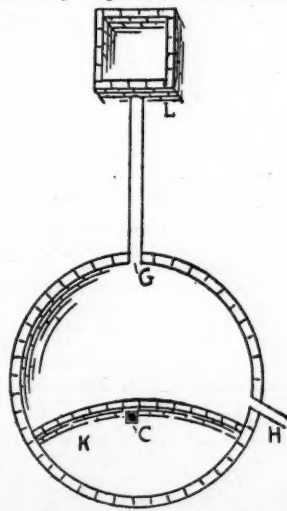


FIG. 2.—HORIZONTAL SECTION OF CISTERN.

Lettered to correspond with Fig. 1.

mains "bug proof" till the cistern has done settling, otherwise centipedes, spi-

tern I have had to repair were laid up with brick without cement and then plastered with cement on the inside.

The handling of the windlass for hoisting and lowering material, and the light in case daylight is shut off above, will differ in different situations. The neck and top are built of pressed brick laid in cement mortar mixed as for the partition filter, and the body plastered with two heavy coats of the same, mixed thicker. The brickwork at the top is shown without cement in the drawing, but it is best to spread on at least one coat. Of course no cement is spread on the partition filter.

The problem of digging the cistern will vary in different situations. In some places the windlass will be placed on the cellar bottom, or in the cistern room or kitchen already built, and the third man will be required to wheel away the earth and dump it outside. In some cases the windlass will be outside and a section will be cut out of the cellar wall to allow the cistern top to go up inside the building. If the cistern can be built first, and the house built over it afterwards, it is all easy to manage.

The method of digging will also differ according to the nature of the ground. In some hard clay ground free from water, the whole cistern may be dug and cut to the right shape by measure before beginning the masonry. In some cases it may be safest to brick up the neck, as soon as it is dug down to the shoulder, shown at N, Fig. 1, and dig and finish the main body below afterwards. In other cases the ground may be treacherous sand, and it will be necessary to dig full size from the top and timber up with plank. If it should be necessary to timber down to near the bottom, then the wall must be built up independent and solid, of brick or stone and cement, and as the work proceeds the plank must be removed from the bottom and the earth rammed as solid as possible behind the wall, or it will be cracked and broken by the pressure of a cistern full of water.

The cistern I have now described may seem an expensive affair, but under favorable conditions it is not so expensive as it seems. I have known scores and hundreds of families to whom such a cistern would be a treasure beyond price. With such a store of the purest, clearest, cold, sparkling water they will wonder how they ever lived without it. And there is no water on earth purer than that which comes down at certain seasons of the year, from the blue vault of heaven.—J. W. Pike.

GETTING OUT MANURE.

The season is close at hand when most farmers wish to clean up the manure yards, and observation shows that a large majority of farmers have not yet learned to take advantage of this job, which is one of the hardest and most disagreeable on the farm.

The common practice is to rig up a single wagon and team, drive in and load up, then drive to the field and spread the manure from the wagon. When managed in this way the team is standing idle over half of the time, stamping the barnyard into holes, fighting flies, when it would be more comfortable if on the move. The men will spend nearly half the time riding to and from the field.

It is next to impossible to do even a passably good job of spreading manure by standing on the wagon and throwing off bunches here and there without being properly shaken apart. This whole job becomes tedious and irksome, and is very likely to be slighted from first to last, which will tell on the next crop.

Several hired men who have helped me with this work have told me that by our plan we could move out more manure for the time and money spent than by any other way they had ever seen tried. We want nothing but a good, strong, willing man to help with this. One team and two wagons are always used. Every passage way into the manure lot is thrown open, so we can pass in or out in almost any direction. While the team is gone to the field to unload one wagon, the man is loading up the other. Care is always taken to drive the empty wagon where the load can be put on with the least work.

But it is in the field that the really skillful work is required. We never attempt to spread from the wagon. The side-board on one side is taken out and the manure pulled off in piles with a manure hook. We use boards ten feet long, with side-boards about two feet wide, and the manure is piled up on these as long as it will lie on. Each load is divided into six equal parts and dumped in conical piles, in straight rows twenty-five feet apart each way. When the manure is in condition for rapid work, we get out about twenty-five loads per day. When it is fine and tramped

sand, eighteen or twenty loads will make a day's work.

When put on at the rate mentioned above it requires about twelve loads to cover an acre. We practice a four-year rotation, consisting of clover, corn, oats and wheat. I have tried for years to figure down this manure spreading pretty fine. I have found that by working all the oats and wheat straw from half of our cultivated land into manure, by feeding all the cornfodder and about all the clover hay from the other half, and by carefully saving and applying all the manure, we have just about enough to cover all our corn ground each year, or all the plow land once in four years. When the season is such that the straw and litter is pretty well rotted down, we have to spread a little thinner than here described in order to make it reach.

Our land in this region is very fertile, so it is not best to apply to anything but corn. It would be almost certain to cause the other crops to lodge. So the manure is applied to the clover sod from which the crop of clover hay has just been taken. This, with the second growth usually plowed under, makes an ideal seed bed for corn. The manuring, of course, is done soon after the hay is taken off or the second growth will prevent spreading properly, and the manure will make trouble if a crop of seed is to be taken.

Some years ago I put piles of manure as here described on a pasture field that was to be plowed for wheat. The hogs rooted the piles down, and scattered them about so we could not do the spreading as it should have been done. Where each pile was there was a spot ten or twelve feet in diameter that had too much manure and the remaining space had very little. When this field was ripe it was a good object lesson for the man who does not believe it pays to spread manure evenly all over the ground. On each of these rich spots the wheat was down flat, while on the remainder of the ground it might have been sown thicker and ranker without falling at all. The field averaged twenty-five bushels, which was fairly good, but I am certain that had the manure been properly spread, it would have made thirty bushels that could have been saved in harvesting. Wheat at that time was worth \$1 per bushel. Here was a loss of \$5 per acre, or \$40 on the eight acres, which would have paid for doing the work right, about a dozen times. Since then we are very careful to get the manure spread over the ground as evenly as possible, so that it will not be wasted on one spot while needed on another. I would like to have it spread so evenly that there would not be a spot as big as my hand without some manure on it, but we never get it done so well as this. "Confession is good for the soul" and so I have told the above.

If not spread as soon as hauled out there may be much loss from leaching; besides it does not work nearly so well if dried by the sun. I attend to this myself and spread each load as it is drawn out.

The old idea was that if manure dried out before being plowed under, it was almost worthless. It is now well known that very little is evaporated except the water.—J. A. Dobie, Auglaize Co., O.

SOAB IN HEADS OF WHEAT.

J. C. Arthur, botanist of the Purdue University experiment station, has been investigating a new fungous disease that has attacked the heads of wheat in Indiana, and has issued the following bulletin in reference to it:

The season, which has been so favorable to many kinds of crops, has also developed to more than usual prominence a number of fungous diseases. Many fields of wheat that just before ripening promised a good yield, have suddenly been struck with a kind of blight that kills the heads or parts of them, and renders the grain worthless. The part of the head affected is easily detected at this time, as it turns prematurely white, while the healthy part remains green. The kernels become shriveled, and soon look moldy.

This injury is so considerable in different parts of the state that farmers are alarmed, and have accused the wheat midge and green fly of causing the damage. It is not due, however, to any insect; but to a minute fungus that attacks the wheat heads at the time of flowering. The spores of the fungus blow through the air, lodge on delicate parts inside the flower and soon penetrate the kernel and envelope it with a mesh of moldy filaments which sap the life of the kernel, and forming new spores spread the disease to other flowers and throughout the field. Looked at carefully the heads appear pinkish from the abundance of the slightly colored spores. The disease is very appropriately called "wheat scab." Although there is no known remedy

for this malady, in fact it has not yet received as much study as its importance warrants, yet one or two precautionary measures have come to light and should be borne in mind. It is observed that some varieties are less subject to scab than others, and that fortunately these include some of the old substantial varieties. On the experiment station grounds at Lafayette, the varieties Velvet Chaff, Early Ripe, New Hybrid Prolific, Harvest King and Michigan Amber, showed almost no scab this season, while other varieties were much injured; for example, Oakta Chief had 25 percent of the heads affected; Diamond Grit, 40 percent; Pedigree Giant, 60 percent; White Golden Cross, 75 percent, and others in intermediate amounts. By taking into account the date of ripening, however, it is seen that all varieties that ripened with us before the first of July are almost or quite free of scab, while those which ripened later are all more or less affected. This agrees with the observations of previous seasons.

At present the best measures against scab are selection of early varieties, and hastening maturity by early seeding, good culture and similar methods. Nothing can be done to mitigate the injury after the scab shows in the field.

WHEAT AFTER OATS.

In many sections an oats stubble, plowed and properly prepared, is thought to be the ideal seed bed for wheat. In fact some farmers follow corn with oats for this reason, not because they value the oats crop very highly, but because they think this the best way to prepare for a maximum crop of wheat. By this plan two crops are taken off the land before the wheat makes its draft on the soil. Whether this is entirely advisable we leave for the present consideration of those that practice it.

By following oats with wheat, the preparation of the soil is an important factor. As to the best way to do this, there is a difference of opinion, the usual practice being to plow the land, the most laborious part of the cultivation, and in this case it must be done in the hottest part of the year. The most serious drawback to this system is the late summer drouth that now so often prevails, making it impossible to plow at the proper time.

Last year in this section, there was a very short time after harvest that it was possible to plow either wheat or oats stubble. A neighbor, to avoid plowing, adopted the plan of working his oats stubble into a seed bed for wheat, by the use of a disc, drag harrow and roller. His soil was hard clay and could not have been plowed, although the oats were sown on sod broken during the winter or just previous to sowing the oats. He first ran the disc harrow over the land without lapping, then he cross harrowed, with the drag harrow. Again he used the disc harrow, lapping one-half, and, if we remember correctly, he again used the drag harrow followed with the roller, before drilling wheat. In all, the land had six workings.

This manner of managing the soil and crop differs from the usual method, in that the oats are sown on sod, and the oats stubble prepared for wheat without plowing. This same farmer is trying the plan again this year.

It is commendable on at least one account: only one crop is taken from the land before the wheat is sown. The manner of preparing the soil has its advantages over plowing, especially in a dry season.

It is possible to get land in order this way, when it is impossible to turn it with the plow. The soil moisture is retained better by this plan than is usually done by plowing.

By far the largest part of wheat sown here follows corn, and last year, on account of the drouth, it was very hard to get the wheat sprouted. The corn in maturing had so exhausted the soil moisture that there was not enough left to sprout the wheat. The farmers that had fallow land properly prepared, succeeded much better in getting their wheat started than those sowing corn stubble. The wheat sown on the oats stubble mentioned, started better than any other that came under our observation.

The drouth did not commence till after the oats crop was taken off the land; consequently it had not exhausted the

soil moisture. The loosening of the surface soil caused it to act as a mulch, retaining the moisture in the soil. Had the land been plowed, as is the usual custom, it would have let loose much more moisture by evaporation than escaped by the other plan. This plan of preparing our stubble for wheat, may—for all we know—be the common practice in some sections where the soil is loose and friable, but possibly not in practice on hard clay soils such as are found in the main here.

It is the general custom to have the wheat seed bed deeper than necessary, and on account of this it is mainly thought best to plow stubble land, whether wheat or oats. But if land can be prepared properly, by shallow working by surface-working tools, the work can be going on independent of drouth, while if it must be done by plowing, the farmer is at a standstill on account of drouthy weather.

When the soil is worked in this dry condition there is no danger of injuring it. On the other hand, when rains are depended on to start the plows, the farmer often injures his soil by working it too wet. It is much better to fine the soil for wheat when its excessively dry condition places it beyond the question of injury than to work it when the amount of moisture it contains makes it uncertain whether the teams should stand or move on.

The satisfactory results obtained from preparing oats stubble for wheat in the instance mentioned, leads us to the conclusion that it is a safe plan and preferable to the old one of plowing. It may require that the soil be gone over oftener than would be thought necessary after plowing, but it must be remembered that this work can be made lighter on the teams, and further, that wheat land cannot be gone over too often if the soil is in proper condition, not too damp.—John M. Jamison, Ross Co., Ohio.

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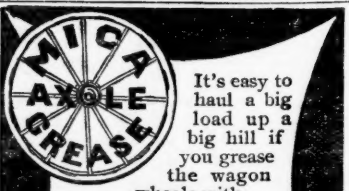
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THE EDITOR'S DAIRY NOTES.

We herewith append a plan of our creamery, showing the present location of apparatus. Formerly the churn room alone sufficed for the use of machinery then manipulated, but we had no cooling room and boiler. Now we have plenty of floor space and can do our work to better advantage.

A SQUARE STRUCTURE IS CHEAPER.

The building is somewhat long and narrow, and not as we would plan for if rebuilding a complete structure. The churn room alone was built and used for two years before adding the other two rooms. The structure is now 12x34 feet. Were we to rebuild, we should plan a structure that was nearly square, as it would take less material to enclose the same amount of floor space. The creamery rests upon a good stone foundation that is frost-proof. The frame or bill stuff is hemlock, and cost \$11 per thousand. Good lumber was used for floor, siding and roof.

DESCRIPTION OF FLOOR PLAN.

The back room contains nothing but the tread power. This power is in perfect working order after four years' use, and not a cent's worth of repairing has been necessary. The separator room contains the separator—in southwest corner—steam boiler, turbine Babcock tester E, table and shelves for cans, etc. At F is located a small tin tank for setting the cans of milk therein. Steam is turned on, and the night's milk heated to 83 to 85 degrees just before running through the separator in the morning.

THE CHURN ROOM—A COOL LOCATION.

This contains the butter-worker A, swing churn, B, wash sink C D, cream vat E, and smaller utensils needed daily in this room.

The cooling room is located in the northwest corner. The plan and description of this room was given in The Farmer of June 25. Reference to the cut shows the churn room in the north end.

At the northwest corner stands a maple tree, and the shade therefrom protects both churn and cooling room from 10 o'clock a. m., until night. Two other large trees afford shade to the whole structure during the middle of the day. We located the creamery exactly where we could secure the largest possible amount of shade from these three trees during the hot summer weather. This is an important matter. In building a dairy room, or small farm creamery, look up a shady location.

THE CREAM VAT.

The cream vat E, is kept in the cooling room during hot weather. During the coldest wintry weather it is transferred to the separator room and kept near the steam boiler at night when ripening cream. This is an automatic ripening vat, with double wall and dead air space all around, including cover and bottom.

CONVENIENCES FOR CLEANSING UTENSILS.

The wash sink C is very handy and commodious. At the east end is a steaming board, with an inclination into the sink. At D is located a rinsing or scalding tank. Pipes and valves connect with the boiler, so that plenty of live steam and hot water can be secured just as wanted.

NO FROZEN PIPES.

The Babcock tester is run by steam, controlled by a hand valve, as well as the heating tank F. All pipes are so arranged that they naturally drain themselves in cold weather when steam goes down, so that we never have any pipes frozen during the coldest weather. The writer cut and fitted the pipes himself, so as to provide for any "zero" emergency. All daily work is done by 10 o'clock, usually, and no steam kept up after that. Two hours after this the fire is out, and yet the boiler will still be warm eight or ten hours afterwards. The boiler is never emptied for fear of frost, and we never found any trace of ice, even when the mercury dropped below zero.

In laying the creamery floor the stringers were put in so as to give a good slope to the rear end. A galvanized iron gutter was put in with an outlet at E, and thus the floor can be flushed at any time, keeping it sweet and clean. A concrete floor is far better, and were we to build again, we should put one in. But even a concrete floor has its faults, and no sour cream, milk, or buttermilk should be allowed for any length of time thereon. The acids affect the cement in time, and the floor is more or less rough in consequence. It is also more difficult

to fasten down light running machinery on a cement floor, where power is used. Our separator and churn are both accurately leveled and rigidly bolted down.

The separator must be perfectly level and the bowl balanced, so that the bowl runs true from start to finish. We used a tested spirit level in doing this, and there is not the slightest tremor to the bowl, when starting or stopping. A bowl in perfect balance does better work, no matter how perfect the machine, and our skim-milk never tests hardly one-tenth of 1 percent, and many times it is impossible to measure the fat with the finest pair of compasses obtainable. No matter how perfectly a machine may be made, it depends upon perfect operating to do perfect work.

We see that the separator always runs at the required speed, is well oiled, and the milk at the proper temperature at the time it goes through the bowl. When running the separator by hand, we used an old clock pendulum to regulate the number of turns per minute. Now we have the automatic regulator of the tread power set so that the crank shaft—upon which the tight and loose pulleys run—does not vary one-quarter of a turn per minute. This tread power gives more even speed to the bowl than do some engines we have noticed in various creameries throughout the country.

In the cut (see separator room) A indicates skim-milk spout of the separator B; the cream tube; C the tight and loose pulleys connecting with the pulleys on the line shafting, and D the feed pan. In starting up, we put the belt on the

warrant this conclusion. Again, the richness of milk does not vary materially in successive months of the same period of lactation. Usually, a cow gives as rich milk the first month as she does the fifth or sixth after the birth of her calf. It is true that in the third or fourth month the quality of her milk drops, but the decline is not important. Still, again, the quality of the milk does not vary with the different seasons. It is perhaps true that the cows on the whole give as poor milk in June as in any other month, but we have been unable to find any great variation in the richness of milk from month to month. It is evident, therefore, that our only way of controlling the quality of milk that we furnish our customers is to select for our herd the cows that produce milk of the richness desired.

The next thing that our lady customer notes in the milk we furnish is freedom from dirt. She does not like to find in the bottom of the bowl, as she empties out her morning's purchase, a teaspoonful of black sediment. I know it is the custom of milkmen to call that stuff metal rubbed from the tin can, but it is in truth filth that ought to be in the barnyard. I have sold milk in an eastern town for a good many months, and know whereof I speak when I say that this filth in milk can be almost if not entirely prevented.

To furnish milk free from dirt the cows must be kept entirely clean as to their sides and udders. Years ago, before the invention of the modern styles of cow stalls, this was practically impossible, but in modern times it is not.

the stables be cleaned out regularly and thoroughly, leaving no excrement on the floor to rot and spoil the air. It is also essential that something like plaster be used after the stables are cleaned, to dry the floor, and check the rise of obnoxious odors. The floors should be level, and indeed must be so smooth as to hold no little puddles of disgusting liquids. As to the material of which the floor should be made, I have no final advice to give. I believe that cement properly laid and not troweled smooth will be found excellent.

So much for the floor on which the cow lies. It is of equal importance that the walls and ceilings be not covered with cobwebs nor coated with dust. It is not necessary to have an expensive cow stable to have a good one. The ceiling need not be planed even, but annually it should be washed down with a disinfectant solution, say one part of mercuric chloride to a thousand of water and immediately whitewashed. I say this should be done annually, every spring.

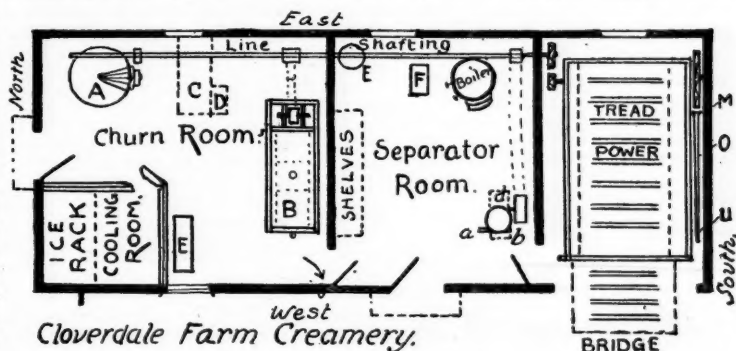
When the milker begins his job, he should be provided with a good brush, by the use of which he removes as far as possible the dirt and scales of scarfskin from the udder and flanks. The milk pail should be clean and free from bacteria-breeding matter. To keep the tinware clean, the vessels must be properly washed. Our method is to rinse in lukewarm water, scrub well in the very hottest kind of sal soda water, without soap, without a cloth, but with a brush; then thoroughly rinse in boiling water, and steam if possible. Milk kept for even a short time in a dirty can soon sours.

I assume that every dairyman knows that while his stable must be reasonably warm, it must be well ventilated and well flooded with sunlight. Clean as the stable may be, well ventilated as it can be, it is still no place in which to store milk, even for a limited time. The rule for the milkmen should be, therefore, to take the milk from the stable at the earliest possible moment, strain it outside if possible and cool and aerate it where the air is pure. I recommend unhesitatingly the aerator. You may choose whatever style you like, but I would use some utensil that will quickly cool and at the same time thoroughly aerate the milk.

Finally, every milkman should feel it due himself to keep his milk cans bright and shining, his milk wagon presentable, and all of the equipment clean and in good order.

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loose pulley of the separator, which is 14 inches in diameter. We start the bowl by hand, using the ratchet pulley, and get up a good speed before shifting the belt. A rope runs from the end of the power brake lever W, up over a pulley to the plate, and thence through H into the creamery. In this way the operator in the creamery can start or stop the tread power instantly and at will, without leaving the room. This is a handy and wise arrangement. The horse is led into the tread power when ready to start up the separator, and hitched by the halter strap to the front rail. No more attention is paid to him until we are through separating the cream. Sometimes we get through with this work before commencing to churn, but both operations can be performed at the same time.

The 80-gallon swing churn is in the back end of the room and hangs in a strong, heavy frame. It has a floor projection at one end with two 18x4-inch iron pulleys attached to a short countershaft. Two pitman shafts run from cranks—one at each end of the shaft—underneath and to the opposite end of the churn. These give the churn an oscillatory motion, causing the cream to turn completely over as it sticks each of the round ends of the churn. We separate but once each day, as this makes less work in washing and cleansing utensils.

FROM THE COW TO THE CONSUMER.

The following extracts are taken from an address by Prof. Clinton D. Smith, of the Michigan Agricultural College, at a meeting of dairymen and milk dealers called for the purpose of discussing methods for improving the sanitary conditions surrounding the production and sale of milk:

Let us ask ourselves, in the first place, what the milk consumer wants. The first test the city lady applies to the milk is to raise the cream and see how rich it is. Where milk is bought primarily to raise cream for coffee, this is an important matter. In supplying this want we must remember that we must select cows that give rich milk, for part of our herd at least, to bring up the quality. Experiments that we have tried at the College have shown us conclusively that we can obtain rich milk in no other way than keeping cows that give rich milk.

In the first place, we have noticed that the quality of the milk of a given cow does not change in successive periods of lactation. I have always supposed that as a cow grew older she gave richer milk, but our experiments do not

The point I make is that you cannot produce clean milk without keeping the cows clean. The importance of this phase of the subject would warrant me in spending a whole hour on it. Cleanliness in this line is not next to godliness, it is godliness. Filthy milk is unhealthy; it ought to be unsalable. It comes from dairies where the sides and udders of the cows are filthy. Keep them clean and the milk may be expected to be so. To procure pure milk it is essential that

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SUGGESTIONS FOR THE SUMMER.

Lambs running with their mothers upon old pastures are by this time invaded by the internal parasites to a damaging extent. I am sure that these pests are at present in very many flocks where their presence is not suspected, and even though no lambs may die from their attacks the loss in growth will be great unless they are eradicated. Act upon some means of finding whether your flock is invaded. The sure way is to dissect one of the flock. The fourth stomach is the seat of the strongly contortus, the most common and most destructive of the tribe because of their wide prevalence and vast numbers. The fourth is the horn-shaped stomach which merges into the entrail so that it might be taken for it by the novice.

Open this with a knife, allow the contents to run out upon a board and the worms can easily be seen by the naked eye if they are present. If only a very few are present they will be found upon the lining membrane of the stomach. The trained eye can determine their presence by observing the skin and visible membranes. These will be paler than normal, showing that the lamb is suffering from depletion of blood.

I am certain that it is not safe to allow lambs to run upon cold pastures this time in the year. Where the entire flock cannot be changed to a new pasture, as aftermath clover, it will be better to wean the lambs and begin at once feeding the bran and oats, with some medicines to destroy the parasites. I do not know of anything that given in single doses will free them from the pests. Nor I do as yet know of any specific, although I have tried all the "sure cures." I am convinced that more heroic treatment is necessary than has generally been thought necessary. Turpentine to be effective must be given at least three successive days upon an empty stomach, and together with enough oil to purge the animal. Treatment that will destroy the very young worms will not destroy the adult ones. This I think explains why some remedies have proven satisfactory with some and have failed to cure in other cases. Remedies that, if given continually throughout the summer with salt or feed, would prevent serious invasions, will not cure bad cases by the administration of one or two doses.

The turpentine treatment indicated, followed by two doses six and twelve hours after the last dose is given of twenty drops of the medicinal solution of the chloride of iron and a tablespoonful of a strong infusion of gentian given in a half pint of water, is a very effective treatment for advanced cases. The infusion of gentian is made by pouring boiling water upon the powdered root and keeping in a closed vessel with occasional agitation.

I know that it looks like a great deal of trouble to doctor each sheep in a large flock but it is impossible to insure that each gets the right amount when the medicine is given in the feed or salt. Another of the pests of the flock in the summer is the maggot of the blow-fly. These sometimes becomes a serious annoyance. Filth in the feet or about the vents are sufficient to attract the fly. The eggs will hatch in a few hours and the presence of a few maggots encourages the deposit of more eggs. I have known sheep to succumb to their torment in three or four days. Continual watchfulness is the only safeguard. Dipping the flock in any of the preparations for killing tick or scab will not secure immunity, but several such preparations when using five to ten times as strong solutions I have found as economical and as effective remedies for killing the maggots and keeping the flies away for a few days as any of which I know. When these are not at hand 10 percent carbolic acid in fish oil or equal parts turpentine and fish oil are effective. A still cheaper remedy is air slacked lime but it must be used with caution. If used in very large amounts it will kill the skin so that it will slough off. When the flies are very bad after a flock it is advisable to move them to a different field.

Solution of blue vitriol is the standard remedy for the ordinary soreness in the cleft of the feet that is more or less common during the summer. If the foot is well trimmed so as to expose all the affected parts a single application will cure. Keep some in a bottle with water upon it; when wanted use the saturated solution. This can be carried in the pocket whenever the flock is visited. Its simplicity insures more frequent use. Lame-

ness this time of year is a case where Ben. Franklin's maxim "a stitch in time" etc. applies.—H. P. Miller.

HANDLING WETHER LAMBS FOR MARKET.

At the last meeting of the Indiana Wool Growers' Association Henry Leaming, a veteran feeder, gave the details of his method of handling wether lambs, from which we take the following as containing some excellent suggestions for feeders:

The proper time to begin preparing lambs for market is before they are born. Constitution, or the ability to assimilate food and grow and fatten rapidly, comes from the parents. The ewes should be thrifty and well fed during pregnancy, and the ram not abused by overwork. I am sure that great loss is often sustained by giving the ram too many ewes. When allowed to run with the flock during rutting season, there should be one ram to each twenty-five or thirty ewes.

The lamb from an ill-used ram, that is so weak when it is born that it cannot get on its feet for a half hour, can never have the stamina or constitution of the one from the sexually strong ram that comes strong and hearty and gets right up and takes care of itself. The docking and trimming should be done when the lamb is about two weeks old and an antiseptic used on the wounds.

In salting lambs I gave ashes mixed with salt, in proportion of one of salt to two parts of ashes. This mixture has a good effect in checking injury from stomach worms, and the lamb is not apt to take an overdose of salt, which will give diarrhea, and sometimes cause death.

Putting lambs into the cornfield to wean is my favorite way. They soon learn to eat corn, and afterwards, when put into the feed lot, they lose no time learning to eat it. If at time of putting into feed lot your flock of lambs is mixed, as to size, age and thriftiness, sort them, putting those of a kind together as nearly as possible, for the small or weak do not have equal chances with the strong. Tag carefully, and should you find any with diarrhea, from stomach worms, give remedy at once. It will not pay to try to fatten an unhealthy animal.

Do not feed against disease, wind or rain. If the lamb is uncomfortable from hunger, thirst, or being wet, hot or cold, it is not putting on weight as it should. Supplying good air, food and water in right quantities at all times and in proper places to his animals constitutes the feeder's art. Air is not good for a feeder's purpose if it is loaded with ammonia, carbonic acid, sulphuretted hydrogen, or has a velocity of sixty miles per hour at a low temperature.

Food is not good if it has not the proper elements of nutrition, or if in unpalatable or indigestible form. Water is not good for the feeder's use if it contains germs of disease to which his flock is liable, or anything that makes it offensive to taste or smell.

Shelter is required to keep the flock from losing weight in times of storm. The ideal shelter is light, dry and airy, but without draughts. The feed lot with east, north and west sides shedded, and with a tight board fence for wind-break on the south, is good enough. And if the feed and water can be given under cover all the better.

Many of us use corn for the grain ration, for to dispose of this, our main crop, to best advantage, is our aim, and in feeding for fat no other single grain is better. But as lambs should be kept growing in bone and muscle, it is better to add oats to the grain ration—say half and half. I have had no experience in feeding turnips or beets to sheep, and while they are said to make good additions to the grain rations, would, I think, make the feeding much more expensive. Flat troughs about one foot wide with sides four inches high are nice to feed ear corn in. A pole or board should be fastened over them to prevent lambs from jumping into them. For forage, I have found nothing better than first-class corn fodder, and know of no better way of giving it to the flock than putting it in a rail platform or a rail pen about three feet high with one side open, so the lambs can get under the platform. The weight of the fodder above holds the stalks firmly and they are well-stripped before being pulled down. If hay is fed it should be in a box, rack or manger, with the opening a foot and a half above the ground and wide enough for the lamb to get its head through easily—six or eight inches wide. If the lambs stand with their heads in the manger and eat they do not waste hay as they do not when they pull it from the rack. The trough for the salt and ashes should not be forgotten.

A lamb of any of our medium-sized breeds of sheep, with a good mother, and on a good pasture, will gain an average of one-half pound per diem until

weaned. If born the first of May it would weigh on the first of October following seventy-seven and one-half pounds. It would take a skillful feeder to go on after the lamb is weaned until it is a year old, and make the same daily gain.

Milk and grass make a combination of food unsurpassed for lambs, and the five months after May 1 are the best five in the succession for making weight or growth.

A lamb six months old would eat one and one-half pounds of grain per diem and gain in weight one-third of a pound. That would be nearly two and one-half bushels of corn, and at twenty cents per bushel, fifty cents for three months' feed, and a gain of thirty pounds, which at five cents per pound would be \$1.50. Or we may change the figures and say two pounds of corn per diem, or three and one-fifth bushels for ninety days' feed, and twenty-five cents for the corn would be eighty cents, and twelve pounds per month gain; thirty-six pounds for three months at five cents is \$2.80.

To succeed well in fitting lambs for the market, as in any other business, requires close attention to details. There is no other stock nicer to handle and I believe none will pay better at present prices.

FLOCKS AND FLEECES.

J. H. Taft, the Hampshire sheep breeder of Mendon, Mich., has started for England, where he will select a big bunch of Hampshires for importation. He says the trip is for business and pleasure and as Mr. Taft finds more pleasure in the Hampshires than anything else on earth, it is easy for him to make the combination.

Referring to the situation in wool, the Texas Farm and Ranch says of wool-growers in that state: "A great many of the Texas sheepmen are hopeful of an improvement in prices and much of the wool is being consigned instead of sold. They are well able to hold on for future developments as they are not forced to sell. Favorable prices for muttons and lambs render the sheep raiser more independent of wool buyers than usual, and there is but little, if any, necessity for asking advances on the wool that is in warehouses."

There is money in such sheep as those raised by R. T. and N. T. Wilson that were recently sheared in Crockett county, the 12,000 sheep producing 64,000 pounds of wool. Out of the same stock there were recently sold 2,000 muttons at \$3.50. Good breeding, good feed and good care will make sheep profitable both on the range and on the farm, says the Texas Farm and Ranch, which is true in nearly every state of the Union as well as Texas. The value of sheep on the farm has never been fully appreciated by the average farmer in most parts of the Union, but its day is surely coming. The animal that can both feed and clothe the people must have its merits appreciated in the days of close competition in farm products.

In a bulletin issued by the United States Department of Agriculture on forage crops, it says of rape as pasture for sheep:

"When it is desired to feed lambs for two or three months during the winter and to put them on the market in January, a month's run on the rape field previous to the final fattening has been found beneficial. Not only are the gains on rape satisfactory, but the subsequent gains are better when lambs are pastured alone during the preliminary feeding period. At the Michigan station it was found impracticable to pasture rape later than November 15. Animals pastured on rape after it had been frosted were especially subject to digestive disorders."

Canada's Great Exposition.

Many new and interesting features will be offered at the Toronto Exhibition, Aug. 29 to Sept. 10. With the return of better times and the unusually low fares now being given by the railways and by lake, many from "the States" will be induced to visit this great exhibition who perhaps would not otherwise do so. Among the many special attractions will be realistic representations of the present Cuban-American War, the blockade, bombardment and battles of Santiago, explosion of submarine mines and blowing up of vessels on the lake in front of the exhibition grounds, exhibitions by Maxim and Gatling machine guns, etc., all of a specially interesting nature at the present time. The exhibits will include many from Great Britain, France and the United States, whilst almost every section of the Dominion will be represented.

HAY is one of the most important crops and everything connected with it deserves attention. As a considerable portion of the crop is each year baled and shipped to eastern markets, a good baling press is not only desirable but a positively necessary piece of machinery. We therefore take pleasure in calling attention to the old reliable Dederick press, which has been a standard machine on the farms of the northern states for nearly 40 years. This press is now manufactured at Owosso, Mich., by the Castree & Shaw Company, with all the latest improvements, and we can conscientiously advise our readers, who may be in want of a press, to give the Dederick fair consideration before purchasing. The firm also make the Star Steel Land Roller, a first-class implement and one that does first-class work.

Veterinary Department.

CONDUCTED BY DR. W. C. FAIR.

Advice through this department is free to our subscribers. Each communication should state history and symptoms of the case fully; also name and address of the writer. The initials will only be given. When an answer is requested by mail it becomes private practice, and a fee of one dollar must accompany the letter.

Worms in Lamb's Stomach.—My lambs look thin. I lost one; opened it after death; found lots of small worms in stomach and bowels. W. O. K., Pontiac.—Give a few drops of zenoleum in cold water three times a day and they will soon get well.

Bog Spavin.—Young horse has bog spavin. At all events we think so. He is not lame. W. K., Midland.—Give him rest and blister hock joint once a week with caustic balsam until he gets well. A run on pasture will do him good.

Warts on Cow's Udder.—Cow has several warts on udder. How can I remove them? W. J., Kalamazoo.—Remove them by use of knife and apply tincture benzoin once a day for a few days. If they persist in growing, apply nitrate silver three times a week.

Indigestion.—Six-year-old horse has sick spells occasionally. He rolls and tumbles until he gets well. He was sick for several hours the last time. W. K., Hillsdale, Mich.—It depends on the kind of feed you feed him. If he runs on grass, give him salt once a day; feed him ginger and soda in each feed but no corn.

Horse Holds Head to one Side.—I have a ten-year-old horse that holds his head to one side. He keeps it very much out of the straight. A. W., Monroe, Mich.—You will find his molar teeth very sharp and no doubt more so on one side than the other. Have a dentist look after him and when his teeth are looked after he will soon drive kindly and straight. He needs no medicine. Take his temperature.

Collar Bruise.—I have a gelding that has a swelling on neck of one week's standing. It is nearly the size of a man's hat caused by working him in a collar without a sweat pad. He had never worked in a collar without a pad before. I have applied vinegar and saltwater and hot water, all of which does very little good. H. S., Georgetown.—Apply cold water freely; also apply acetate lead one ounce, sulphate zinc one ounce, water one quart, three or four times a day. Keep the collar off until it gets well.

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Special excursion August 4th from Detroit to the Falls at the above low rate. See Michigan Central agents for particulars.

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SEED GRAIN.

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Farmers' Clubs.

CONDUCTED BY A. C. BIRD,

All correspondence for this department should be addressed to A. C. Bird, Highland, Mich.

UNIFORM SCHOOL TEXT BOOKS.

The fact that at the annual school meeting soon to be held nearly every school district in the State will take action upon the Uniform Text Book law passed by the last legislature, impels us to give up this department for this issue to the presentation of this subject. Believing the people of the State should know just what they are voting upon we publish the law in its entirety in these columns. Believing further that there is a general desire for the opinion of Superintendent of Public Instruction Hammond on the question we have asked for an expression of his views, and are enabled to present them herewith, in so far as he is at present prepared to express them. A further article by Superintendent Hammond may be expected in a succeeding issue, which will sum up the results of his investigations along this line. The painstaking care he is giving to the study of this most important question is deserving of high commendation, and his conclusions, soon to be reached, will be received with great respect by the people of the State.

Every person in the State of Michigan should read this law in its entirety; and surely no one interested in the work of our common schools will fail to give it the most careful consideration. We would call particular attention to the following provisions:

1. The personnel of the board. Sec. I.
2. Good text books guaranteed. Sec. I.
3. Method of advertising. Sec. 2.
4. Prices guaranteed. Sec. 3.
5. Old books taken in exchange at time of introduction. Sec. 5.
6. How districts may exempt themselves from the provisions of the act. Sec. 8.

7. It should be particularly noted that any district desiring to be exempted from the provisions of this act must formally decide not to come thereunder at some annual or special meeting previous to Jan. 1, 1899, and a majority vote of all the qualified electors of the district is required to reject the same.

Personally, we believe the idea aimed at in the law a good one, and that eventually its weaknesses will be remedied by legislative amendment. Like all measures of such great importance its adoption involves several elements of danger, but there is so much to be gained by the uniform system that the experiment merits an honest trial. It is peculiarly one of those measures which will demand constant and perpetual watchfulness on the part of the people if it is to be kept from falling into deserved disrepute. This is not so great an objection, however, as it once was, for through their magnificent organizations, the Farmers' Clubs and Grange, the people are becoming safely alert to their interests.

TEXT-BOOK LEGISLATION.

[From Advance Sheets of the Report of the Hon. J. E. Hammond, Superintendent of Public Instruction for Michigan.]

There has been such a difference of opinion and statement in matters pertaining to the supply of text books for our public schools that neither book-seller, book buyer, school teacher or legislator was able to decide properly, even in his own mind and for himself, just what statements were right and what wrong; therefore during the summer of 1898, a competent and experienced office force will be working on an exhaustive report on the subject of "Text-book legislation" not only in Michigan, but in the United States, in order that reliable data may be on hand to aid in the solution of this problem. At the time our annual report goes to the printer, this work is about one-half completed. Therefore, it will be necessary to publish, later in the year, a pamphlet giving the result of our study of "Free text books, uniform text books, State publication of books, etc.," and I beg to be excused from making any general recommendations in this report or from passing any positive opinion concerning the main features of the law of 1897, which provides for the appointment of a State text-book commission and the selection of a series of books to be used uniformly in all the schools of the State.

A few features of this question I will, however, mention somewhat briefly. It is a universal belief throughout our State and country that our text books cost too much, that changes are made too often, and that teachers and school officers are very much annoyed, if not unduly

influenced, by the solicitations of book publishers and their agents. On these three points there is a great difference of opinion. Many contend that a mandatory free text-book law is the best way out of the so-called difficulty; others contend that such a system subjects boards of education to the troublesome solicitation of traveling representatives of book firms, together with their corrupting influence. I am not prepared to state that the presence of the book agent is, all things considered, detrimental to the best interests of the schools; and, on the whole, I am inclined to believe that the free text-book plan is by far the better one.

While recognizing some excellent points in the law of 1897, which will be discussed to a considerable extent in the before mentioned general report on text books, I wish here to mention a few defects in the law that should be remedied by subsequent legislation before the State text-book commission takes definite action in the selection of a uniform series of books.

1. If the assertion made by publishers that the prices in the law are too low to secure suitable books is true, the law should be so amended that the text-book commission may be able to secure first class books. Personally, I am inclined to believe that some of the prices could be lowered and that others should be raised somewhat.

2. The law should be so amended as to show how many years the books selected by the commission must be used before a change can be made; and it should provide for a continuance of the commission so that there shall be a properly organized body to act when the time comes for a change to new books or a revision of the old.

3. There should be a penalty provided for school districts that refuse to come under the provisions of the law.

4. If the law is a good one, that part which provides that districts may vote "not to come under" should be stricken out so that all districts may either come under the provisions of the uniform law or adopt free text-books. If this is not done, the original purpose of the law, namely uniformity, is defeated. If the law is not a good enough one to stand this amendment, then the entire law should be repealed, and that without delay.

5. The law should be amended so that there may be no misunderstanding as to the number of votes required for the adoption or rejection of the free text-book proposition. I desire to state here that the law should be worded, "a majority of those present and voting shall decide." It is very difficult to determine the question in any other way.

UNIFORMITY OF TEXT BOOKS.

[Act No. 198, Public Acts of 1897.]

WHO CONSTITUTES BOARD.

Section 1. The people of the State of Michigan enact, That the State Board of Education together with three county school commissioners to be appointed by the governor and to serve for the term of five years, shall constitute a board of commissioners for the purpose of making a selection or procuring the compilation for use in the common or primary schools of the State of Michigan of a series of text books in the following branches of study:

BRANCHES OF STUDY.

Spelling, reading, arithmetic, geography, English grammar, physiology, history of the United States, civil government of the United States and civil government of Michigan, algebra, physics, and a graded system of writing books: Provided, That none of said text books shall contain anything of a partisan or sectarian character.

CHARACTER AND QUALITY OF BOOKS.

And provided further, that the foregoing books shall be at least equal in size and quality as to matter, material, style of binding and mechanical execution to the following text books now in general use, namely. The Speller to Harrington's spelling book, the readers to Swinton's readers, the arithmetics to Milnes' arithmetics, the geographies to Frye's geographies, the grammars to Hyde's grammars, the physiology to Hutchinson's physiology, the histories to Fisk's histories of the United States, the civil government to Thorpe-King's civil government of the United States, and to Thorpe-King's civil government of Michigan, the algebra to Wentworth's algebras, the physics to Gage's physics, and the writing books to the Electric copy books.

ADVERTISING FOR SEALED PROPOSALS.

Section 2. The said board of commissioners shall, after January 13, 1899, advertise for 21 consecutive days in two daily papers published in this State, having the largest circulation, and in one newspaper of general circulation in each of the cities, New York, Philadelphia, Cincinnati, Chicago, and St. Louis that

at a time and place to be fixed by said notice, and not later than six months after the first publication thereof, said board will receive sealed proposals on the following:

First, From publishers of school text books, for furnishing books for use in the common or primary schools of this State, as provided in this act, for a term of five years, stating specifically in such bid the price at which each book will be furnished, and accompanying such bid with copies of each and all books proposed to be furnished in such bid;

Second, From the authors of school text books who have manuscripts of books not published, for prices at which they will sell their manuscripts, together with the copyright of such books for use in the public schools of the State of Michigan;

Third, From persons who are willing to undertake the compilation of a book or books or a series of books, as provided for in section 1 of this act, the price at which they are willing to undertake such compilation of any or all such books to the satisfaction of and acceptance of the said board of commissioners: Provided, That any and all bids by publishers, herein provided for, must be accompanied by a bond in the penal sum of fifty thousand dollars, with surety, to the acceptance and satisfaction of the governor of this State, conditioned that if any contract be awarded to any bidder hereunder, such bidder will enter into a contract to perform the conditions of his bid to the acceptance and satisfaction of said boards: And provided further, That no bid shall be considered unless the same shall be accompanied by the affidavit of the bidder that he is in no wise, directly or indirectly, connected with any other publisher or firm who is now bidding for books submitted to such board, nor has any pecuniary interest in any other publisher or firm at the same time and that he is not a party to any compact, syndicate or other scheme whereby the benefits of competition are denied to the people of this State: And be it further provided, That if any competent author or authors shall compile any one or more books of the first order of excellence and shall offer the same as a free gift to the people of this State, together with the copyright of the same and the right to manufacture and sell such works in the State of Michigan for use in the public schools it shall be the duty of such board of commissioners to pay no money for any manuscript for such book or books on the subject treated of in the manuscript so donated; and such board shall have the right to reject any and all bids and at their option shall have the right to reject any bid as to a part of such books, and to accept the same as to the residue thereof.

OPENING AND INVESTIGATION OF PROPOSALS.

Sec. 3. It shall be the duty of such board to meet at the time and place mentioned in such notice, and open and examine all sealed proposals received pursuant to the notice provided for in section two of this act, and it shall be the further duty of such board to make a full, complete and true investigation of all such bids or proposals, and to ascertain under which of said proposals or propositions the school books can be furnished to the people of this State for use in the common schools at the lowest price, taking into consideration the size and quality as to matter, material, style of binding, and mechanical execution of such books.

PROFITS OF RETAIL DEALERS.

Provided always, That such board shall not, in any case, contract with any author, publisher, or publishers for the furnishing of any book, manuscript, copyright, or books, which shall be sold to the people for use in the public schools of this State at a price above or in excess of the following, which shall include a profit to the retail dealers in such books of 20 percent, namely: for a spelling book, 15 cents, for a first reader, 15 cents; for a second reader, 25 cents; for a third reader 35 cents; for a fourth reader, 45 cents; for a fifth reader, 60 cents; for an arithmetic, intermediate, 30 cents; for an arithmetic, complete, 45 cents; for a geography, primary, 35 cents; for a geography, complete, 90 cents; for an English grammar, elementary, 25 cents; for an English grammar complete, 55 cents; for a primary physiology, 25 cents; for a higher physiology, 75 cents; for an elementary history of the United States, 30 cents; for a complete history of the United States, 75 cents; for a civil government of the United States, 60 cents; for a civil government of Michigan, 25 cents; algebra for beginners, 35 cents; algebra complete, 60 cents; for copy books, each 5 cents.

PUBLICATION OF MANUSCRIPT BY BOARD.

Sec. 4. If upon the examination of such proposals, it shall be the opinion

of such board of commissioners that such books can be furnished cheaper to the patrons, for the use in common or primary schools of the State, by procuring and causing to be published the manuscript of any or all of such books, it shall be their duty to procure such manuscript, and to advertise for sealed proposals for publishing the same, in like manner as hereinbefore provided, and under the same conditions and restrictions. And such contract may be let for the publication of all such books or for any one or more of such books separately; and it shall be the further duty of such board of commissioners to provide, in the contract for the publication of any such manuscript, for the payment, by the publisher, of the compensation agreed between such board and the author or owner of any such manuscript, for such manuscript, together with the cost or expense of copyrighting the same.

SUPPLY AND PRICE OF BOOKS.

Sec. 5. It shall be a part of the terms and conditions of every contract made in pursuance of this act for the publication of any book or books, that such contractor shall sell or cause to be sold for cash to all merchants and dealers and to such school districts as are now or may hereafter furnish free text books for use in school or schools of said district who may apply therefor, and in such quantities as they may require, a sufficient number of such books as are published under such contract to fully and promptly supply the demand for such books, which book or books shall be sold to merchants or dealers and to said school districts at a price of 20 percent less than the contract price of such book or books. It shall also be a part of the terms and conditions of every contract made in pursuance of this act that said contractor or shall furnish the book or books in use in said schools on same subjects and of the same grade, at a discount of fifty percent from the contract price of said books. It shall also be stipulated in every contract made in pursuance of this act, that any book or books published under said contract shall be equal in quality as to matter, material, style of binding and mechanical execution to the books named in section one of this act, and any failure of the contractor to maintain the standard of excellence of the said book or books fully up to the standard herein named, shall work a forfeiture of said contract; also that contracts made for the publication of physics, histories, and geographies shall stipulate that said books shall be revised every three years as directed by said board of commissioners, in order that said books may be fully up to date as to the events transpiring in the world in relation to the subjects treated on in said books.

PENALTY FOR EXTRA CHARGES.

Sec. 6. Any merchant or dealer who shall knowingly or willfully charge, receive, collect or attempt to charge or collect, for any school book or books by him sold to any school patron or pupil, any sum in excess of the price at which such book or books are required to be sold by law, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be imprisoned in the county jail not more than six months nor less than thirty days, and fined in any sum not exceeding five hundred dollars.

LABELING OF BOOKS.

Sec. 7. It shall be the duty of any person or persons, firm or corporation who may hereafter furnish or supply books under the provisions of this statute to print in large letters upon the outside of the first cover of each book so furnished and supplied by him or them, the name of the adopted book, and upon the outside of the back cover the price at which such book is furnished to be sold to the patrons or pupils of the public schools of this State under each contract, and it shall be the duty of all county school commissioners and school teachers to see that all the books so furnished for use in the public schools of the State shall bear such imprint. Provided, This section shall not apply to copy books.

BOOKS USED IN COMMON OR PRIMARY SCHOOLS.

Sec. 8. The books which may hereafter be adopted by the State of Michigan for use in its common or primary schools by virtue of this act, shall be uniformly used in all the common or primary schools of the State except as hereinafter provided, in teaching the branches of learning treated of in such books, and it shall be the duty of the proper school officers and authorities to use in such schools such books for teaching the subjects treated in them. Provided, That no school shall be prohibited from using any supplementary books;

DISTRICTS THAT ARE EXEMPTED.

Provided however, That the provisions of this act shall not be mandatory on districts that are furnishing free text books for use in the schools of the dis-

trict or that may, at the annual meeting or at any special or general election in the years eighteen hundred and ninety-seven and eighteen hundred and ninety-eight, by a majority vote of the qualified electors of said district, determine to furnish free text books for use in the school or schools of the district, and it shall be the duty of the school board of the several districts that have not previously adopted free text books to submit the question of the adoption of free text books to the electors of the district at any annual school meeting or special or general election during the years eighteen hundred and ninety-seven and eighteen hundred and ninety-eight under the condition and provisions of act number one hundred and forty-seven of the session laws of eighteen hundred and eighty-nine: And provided further, That the provisions of this act shall not be mandatory on any district which shall at any annual, special, or general election during the years eighteen hundred and ninety-seven and eighteen hundred and ninety-eight determine, by a majority vote of the qualified electors of said district voting on the subject, not to come thereunder.

Sec. 9. It shall be a part of the terms and conditions of every contract, made in pursuance of this act, that the State of Michigan shall not be liable to any contractor hereunder for any sum whatever; but that all such contractors shall receive their pay and compensation solely and exclusively from the proceeds of the sale of the books, as provided for in this act.

Sec. 10. As soon as such board of commissioners shall have entered into a contract or contracts for the furnishing of books for use in the public schools of this State, pursuant to the provisions of this act, it shall be the duty of the governor to issue his proclamation announcing such fact to the people of this State.

Sec. 11. The sum of one thousand dollars is hereby appropriated out of any funds in the State treasury not otherwise appropriated for the purpose of paying the cost and expenses incident to the giving of the notices herein provided for, and carrying out the provisions of this act. All laws and parts of laws in conflict with the provisions of this act are hereby repealed.

The Horse.

CONDUCTED BY ROBERT GIBBONS.

Address all correspondence to MICHIGAN FARMER, Detroit, Mich.

THE CROSS SEEMS TO BE A GOOD ONE.

The value of the French coacher as a cross for the American trotter has been the subject of much discussion, and a good deal is yet being said and written by those interested. As the question is being tested in a practical way by several breeders it is little use discussing the matter from a theoretical standpoint. So far as results have been reported the two breeds seem to niche well together. The Messrs. Hamlin, of Buffalo, in a recent consignment of trotters to Europe, included a remarkably handsome animal said to have been sired by Chloris, son of Mambrino King, and out of a French coach mare. The horse is said to be of the finest coach type, and will no doubt sell at a high figure.

A few weeks ago an Iowa firm shipped a pair of half-bred French coach geldings to Buffalo, where they sold at auction, for export to London, at \$575. These geldings were well matched, had plenty of substance and fine action—three positive requisites in a carriage or coach team. A number of other pairs, bred in the same way, have been sold recently in the Buffalo market. A pair from Canada brought \$400, a pair from Illinois, \$450, and several other pairs ranged in price from \$400 to \$500. These horses averaged close to 1,200 lbs. each, and were all taken for export by men who make a business of selecting animals for the foreign trade.

Judging from results so far obtained it would appear that the question as to the desirability of crossing the two breeds is already answered in the affirmative. From a theoretical standpoint the cross is in a accord with the true principles of breeding. It is not a violent out-cross because the two breeds trace to the same foundation stock—the English thoroughbred. A brief study of the history and breeding of the French coacher will show that he carries fully three-quarters of the blood of the thoroughbred and through the greatest horses of that breed that ever performed on the English turf. Thoroughbred sires of the finest breeding were used one after another while the breed was being perfected, the aim of the breeders being to

secure quality, style and substance, with fine trotting action. While the breed has never attained the speed of the American trotter, it must be acknowledged that in other desirable qualities it breeds them more uniformly than our great breed of light harness horses. That is there are fewer undersized, ill-formed animals among the French coachers than among American trotters. While the best of our trotting horses have proved themselves equal in beauty and action to any other breed on earth, it must be acknowledged that too many of them have nothing to recommend them except speed.

When we come to analyze the breeding of the American trotter it is surprising to see how large an amount of the blood of the thoroughbred he carries, and that through the very best families. While imported Messenger is generally referred to as the foundation of the American trotter, we find that liberal use of other thoroughbreds has been made. Imp. Trustee, and many of his sons and daughters, imp. Diomed, imp. Sovereign, imp. Hercules, imp. Bonnie Scotland, imp. Virginius, imp. Lapidist, American Eclipse, Boston, Lexington, and other American-bred thoroughbreds, are all represented in the best trotting families. The horses mentioned trace back to the very sires used in founding and perfecting the French coacher. Why should not these two breeds niche well? If a man has a small-sized mare, whose conformation is faulty, but yet has speed and good breeding, we think breeding her to a good French coacher, possessed of the qualities she is lacking, would be a very sensible method of improving the value of her progeny. It is an accepted fact, which breeders of light harness horses should always keep in mind, that speed alone will not make horses salable; that they must in the future have size, style, symmetrical proportions and fine action.

UNCLE SAM IS AFTER HORSES.

Uncle Sam wants 40,000 horses. His agents are spreading out over forty states buying all the salable and suitable horseflesh. In order to get these horses at once Uncle Sam is paying 10 percent above open market price. Hundreds of \$100 horses are bringing \$110. In order to increase the army to war strength every cavalry regiment needs 800 additional horses, and every artillery regiment 400. Of course, only the right horses are wanted. Out of every 100 offered only about 30 are accepted. Horses that are restive, vicious, or too free in the harness, or which upon rigid inspection do not meet all requirements, are rejected.

The essential points of a cavalry horse are: Sound in every particular; good healthy color, clean limbs, and a good coat; between 5 and 8 years old; weight between 1,000 and 1,500 pounds; between fifteen and fifteen and one-half hands high; free from bad habits; ambitious. A half-bred horse is more durable than a thoroughbred for rough riding. The cavalry must have horses that can be turned into the ranks ready for use. A nervous horse is as bad as a nervous man. Cavalrymen detect a nervous horse by touching it under the fetlock, where the bone is sensitive. If the beast is inclined to kick he will do so then.

Government officers who select horses think bay the best color. A bay is more apt to be sound and healthy. White animals are not wanted. The enemy can see them at night. A soldier who expects to go into battle never wants a white mount. Artists who insist upon putting generals on white horses do so for artistic effect, and not because the real, life model was thus mounted. Twenty thousand horses are needed here at Tampa, 5,000 at Chickamauga, 4,000 at Mobile, and 8,000 elsewhere. If you have one horse or one hundred horses for sale, write to the horse commission, care of quartermaster's department, at any of these places. All letters will be answered immediately. The chief of the horse commission at Tampa has given me the following technical description of the horses which Uncle Sam will buy, and for which he will pay spot cash:

"The animal must be sound, without blemish or defect, well bred and of kind disposition, and free from vicious habits; well broken to harness and gentle under saddle, with easy mouth and gait, and with free, prompt action at the walk, trot, and gallop, and otherwise conform to the following description: To be geldings of uniform size and color; in good condition, from fifteen and one-quarter to sixteen hands high, weight of leaders not less than 1,000 pounds, and that of wheelers not more than 1,500 pounds; from 5 to 8 years old; head and ears small, forehead broad, eyes large and prominent, vision perfect in every respect, chest full and deep, front legs

straight and standing well under; shoulders sufficiently broad to support collar, not too heavy; barrel large and increasing from girth to flank, the withers elevated; back short and straight, with broad, deep loins, with solid hind quarters; hocks well bent and under the horse; the feet sound and in good order; long-legged, loose-jointed, long-bodied, and narrow-chested. Only dark colors are desired—dark sorrels, bays, browns, blacks, and dark roans."

Every horse enlisted in the army has to go through a course of instruction just the same as every recruit. It is important that the horse as well as the cavalryman shall understand his business. The animal is first given a lesson in running round a central point, with a rope tied to his neck. If balky or unruly he is strapped and thrown to the ground. Later he is taught the various gaits, is given a course in trotting and galloping. Following this he is given bending lessons, how to passage right to left, how to turn on fore feet and so on. In the drill the movement of the cavalry horse must be like machinery. He must be like a circus horse, understanding every command of his master. Another interesting feature of training a horse is to make him lie down when commanded. In battle horses are used by the cavalrymen as breastworks. When a horse will lie down when commanded the most difficult part of the training process is over.—Gilson Willets in Leslie's Weekly.

HORSELESS CARRIAGES.

Two or three years ago it was broadly asserted that horseless carriages would soon be in universal use, and that the day of horses was over, except for plugs on the farm. A great deal of money and time and inventive brain work have been employed to bring about the fulfillment of this prophecy, but its realization seems to be as far off as ever. A few, perhaps half a dozen, are in operation in this State, and an occasional glimpse of one can be seen, but they are experiments only. They are large, heavy, ungainly looking things, and more or less noisy and ill-smelling.

A writer in Breeders' Gazette says that American manufacturers have invested about \$3,000,000 in horseless carriage plants. Coal oil and gasoline have proven failures, and now electricity—the storage battery—is to be tried. The Hartford concern is building vehicles weighing about 1,000 pounds, and the storage battery weighs 850 pounds. It costs 50 cents to charge a battery and it requires three hours' time, and one charge will run the vehicle 30 miles. The vehicle cost \$3,000. These facts show that the practical, popular horseless carriage is still only a hope, and the writer above alluded to adds: "In the face of such a showing it is safe to go on breeding good coachers and drivers. Every reaction of such efforts to displace the horse for purposes of business and pleasure will only increase confidence in him and add to his value. Possibly the auto-car may some day displace hacks and streetcars to such an extent as to compel farmers to breed better horses or none."

HORSE GOSSIP.

Since the breaking out of the war three months ago, the government has paid \$1,250,000 to the farmers of Missouri for mules, and \$97,500 for horses. The war has not been a bad thing for Missouri up to the present date.

One of the best four-year-old fillies in Austria is said to be the result of crossing the American trotter Prince Warwick on a highly bred Russian mare. This filly won all the big events at Vienna, and is very promising.

A California farmer is utilizing his low grade raisins by feeding them to his horses. He says they are cheaper than barley or oats, and that the horses seem to relish them, and keep in good condition. The drought in that State has made the coarse grains scarce and high.

The American colt Jiffy II, owned by the Lorillard-Beresford stable, was the High-Weight Handicap winner last week over 10 competitors. The distance was a mile and three furlongs. The same day the filly Lakota, owned by the same stable, was third in a plate race in which nineteen two-year-olds started.

At the recent horse show held at Richmond, Eng., in the class for the best horse in harness shipped from Canada or the United States, the stallion Gold Ring won the \$350 cup, and Fides Stanton was given second place and also highly commended. These horses were exported from Canada, where they were owned, but are American trotters. Both were well known on American tracks and are fine campaigners.

Advices from France are to the effect that the imposition of the 200 franc duty on imported horses has had the result

of increasing domestic values substantially to that amount. The French breeders are now in a fair way to become prosperous once more, for besides the increase in prices for workers, there are five American importers at present in the French breeding districts seeking French Coach and Percheron stallions and mares.

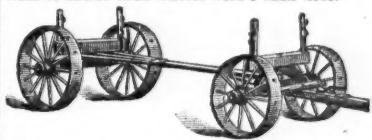
The get of Fuschia are winning in the French trotting races, just as they have won for the past five years and, at this writing, bid fair to pile up as great a total of money won as they did last season. This sire's get has won upwards of \$263,000 during the period named and if his three and four-year-olds keep up the clip they have set so far this year, they should add quite \$60,000 to that grand aggregate before next December.

A remarkable instance of the depreciation of horseflesh, says the Drovers' Journal, was illustrated in a consignment of cavalry horses for inspection. Among the offerings was a bay five-year-old gelding that apparently filled all the requirements of the army regulations, and if accepted would have commanded \$125 on the contract. His height, wind, soundness and temperament were acceptable, but by a close shave he fell short of the requirements in conformation, and was rejected. The animal was sent to the auction and sold for \$35, and on trial proved green in harness and was rejected, returned to the sale ring and resold as a green worker for \$22.50.

The London Live Stock Journal, in speaking of the prevention of saddle galls, says that when a horse has returned to the stable after a long ride he should by no means be unsaddled within from half an hour to an hour after dismounting, or it may tend to the production of saddle galls, which may be very difficult to cure. These galls have their origin in uneven pressure of the saddle, due to faulty construction, from shifting of the saddle when the girths slacken, and not unfrequently from bad riding. The reason why the non-removal of the saddle for some time after dismounting acts as a protective against sore backs is well explained by Mr. Moller. Where an injury has taken place the vessels are compressed and almost bloodless. If pressure be now suddenly removed, blood is vigorously forced into the paralyzed vessels, and may thus rupture the walls. On the other hand, if the saddle is allowed to remain some time in position, circulation is gradually restored without injury.

Farm Wagon for Only \$19.95.

In order to introduce their Low Metal Wheels with Wide Tires, the Empire Manufacturing Company, Quincy, Ill., have placed upon the market a Farmer's Handy Wagon, sold at the low price of \$19.95. The wagon is only 26 inches high, fitted with 24 and 30-inch wheels with 4-inch tires.



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CLEVELAND, SATURDAY, JULY 30, 1898.

This paper is entered at the Cleveland Postoffice as second class matter.

MICHIGAN IN THE WAR.

So far in the war with Spain Michigan men have managed to keep in the front rank since its beginning, and it is worth while noting what some of the veterans from this State, as well as the enthusiastic young men who have left their homes to uphold the honor of the flag, have been doing.

At the head of the War Department is Gen. R. A. Alger, a veteran of the war of the rebellion, ex-governor of the State, and a man capable of handling large business affairs. While he has been criticised unfavorably by the jingo press, and insinuations have been made regarding his ability to fill the position he occupies, the criticisms have been exceedingly mild as compared with the vituperation and abuse showered upon Mr. Stanton who occupied the same position during the civil war.

One of his assistants is George H. Hopkins, a citizen of Detroit, born in Washtenaw county, also a veteran of the civil war, serving in the 17th Michigan infantry.

At the head of the army in Cuba is Major General Wm. Shafter, a soldier since boyhood, a member of the 7th Michigan Infantry in the civil war, and an officer in the regular army since its close. He has fought his way up from the ranks. Gen. Shafter is a native of Michigan, born near Galesburg, Kalamazoo county.

Commanding one of the brigades under Gen. Shafter during the attack on Santiago was Brigadier General Henry M. Duffield, a native of this city, also a veteran who proved himself a good soldier in the past, and a popular commander in the present troubles.

In the rank and file of the army with Gen. Shafter are two regiments of Michigan troops, over 2,000 in all. That they have done their whole duty hardly requires saying. Michigan men have had a habit of doing this in the past, and they are not degenerating. Their ability to not only do their share of fighting, but to make the best of their surroundings and utilize everything possible in emergencies, was well known in the Union army, and it seems, from a statement of an English correspondent, that this resourcefulness in emergencies is still a prominent feature in the men sent out from this State. The story comes from a special correspondent in Washington, and is as follows:

Mr. Low, war correspondent of the London Chronicle, who has just arrived at Washington from Santiago, tells an interesting story of a half dozen stalwart lumbermen in the Thirty-fourth Michigan regiment, wires the Washington correspondent of the Free Press. In moving upon Santiago the troops were required to ford many little streams, which were swollen into torrents by the heavy rainfall. The Michigan boys waded through several of these streams, but when finally they reached a gully through which a torrent of water, apparently five feet deep, was rushing, they hesitated to enter it. A young

lumberman from the upper peninsula, standing six feet and several inches in his army shoes, stepped up to one of the engineer officers who had come up, and said:

"We have three or four men in our company, sir, who can bridge that stream."

"I dare say," was the response, "but it would take two days."

"We'll do it in two hours, if you say so," was the response, and upon receiving permission the wood choppers went to work and felled three big trees with such skill and celerity that in two hours the troops had passed over dry shod on a substantial bridge made of three parallel trunks of the fallen monarchs of the forest.

"The next time I go to the front," said the engineer who witnessed the feat, "I want half a dozen Michigan wood choppers attached to my staff. They beat all the bridge builders in the engineer corps."

It is apparent from this little story that Michigan's representatives in the ranks of the two regiments in Cuba are of the same class that gave the troops from this State such a reputation in the civil war. It was a popular general in the army of the Potomac who said, after a hard day's fight, "put a Michigan regiment on guard tonight so we can have a good rest."

Then there are the naval reserves from this State, mostly from Detroit, young men who held good positions, and never knew what hardship was, serving as the crew of the Yosemite, and doing their whole duty under all circumstances. It is undoubtedly a harder test than they expected it would be; but so far they have borne themselves like men, and those who do return will return with an experience that will make them better men and better citizens.

Back of the men who plan campaigns and command in battle are the rank and file who, musket in hand, await the orders of their superior officers. Upon these men finally falls the heavy work of the campaign. They must do the marching and the fighting, and without them the plans of the strategist are worthless, and victories could not be gained. It is primarily to these men that the country is indebted for its victories—men who will never be known in many instances—yet whose bravery in the face of death enabled them to overcome every obstacle, and give the army of the United States renewed prestige with the nations of the earth. To the victories gained, Michigan soldiers contributed their full share, and if the war goes on, and it certainly looks as if it must for some time yet, the men sent from this State will surely be heard from at every opportunity, and the honor of the State will be upheld under all circumstances, whether in the camp, on the march, or in the fiery ordeal of the battle-field.

OUR FUTURE TRADE WITH CUBA AND PORTO RICO.

This question of the future trade of the United States with Cuba and Porto Rico is a very important one, and anything that will throw any light upon the subject is of interest. That the war will exercise a strong influence upon the future of these islands and their commercial relations with this and other countries is certain. Up to the present time the influence of Spain in the islands named has of course been paramount, and everything possible was done that would tend to aid that country commercially. Of course their proximity to the United States, which was a market for much of their agricultural products, especially raw sugar and tobacco, was a large factor in our favor; but the laws formulated by Spanish statesmen for the government of their colonies formed a barrier difficult to overcome, and the trade between those islands and this country never attained the proportions it naturally would under more favorable circumstances.

According to the National Bureau of Statistics, Cuba has been, under normal conditions, buying annually about \$25,000,000 worth of goods from Spain, \$4,000,000 worth from Great Britain, and less than a million dollars worth each from France and Germany, while from the United States her purchases have ranged from \$8,000,000 to \$24,000,000 in value. Thus in 1897 the imports from the United States were, according to official reports, \$8,259,776, in 1896 \$7,530,880, in 1895 \$12,807,661, in 1894 \$20,125,321, and in 1893, when they reached the maximum, \$24,157,698, having been in 1892 \$17,953,570, and in 1891 \$12,224,888. The reciprocity treaty with Spain, made under the McKinley tariff act of

1890, went into effect September 1, 1891, and continued in force until August 28, 1894, so that the business of the fiscal years 1892, 1893 and 1894 was transacted under that treaty with the exception of July and August of the fiscal year 1892.

From Spain the imports into Cuba of the year 1896 were 134,461,675 pesetas, the value of the peseta being, according to the mint bureau, 19 3-10 cents. The imports from Spain in the year 1896 were larger than those in any preceding year in the decade. The largest item of the 1896 imports into Cuba from Spain was flour, 20,326,882 pesetas in value; shoes, 17,249,760 pesetas; sandals, 13,433,510 pesetas; firearms, 9,361,200; wine 7,347,045; preserved food, 4,742,361; oil, 3,316,213; manufactures of flax and hemp, 3,700,087; soap, 3,176,846; wax and stearine, 2,095,622; manufactures of wood, 2,257,840; smoking paper, 1,885,231; beans, 1,878,019; rice, 1,494,849; corn, 1,432,815; onions and potatoes, 1,205,115; pressed meats, 1,581,570; soup pastes, 1,435,999; saffron, 1,171,260; packing paper, 1,420,235; woolen blankets, 1,099,856—no other article passing the one million pesetas in value.

The exports from Spain to Porto Rico amounted in 1896 to 37,660,609 pesetas in value, a larger sum than any other preceding year in the decade. The largest item was cotton manufactures, 12,439,767 pesetas; shoes, 5,380,740; sandals, 3,601,380; rice, 2,652,611; soap, 1,255,814; oil, 1,202,075—no other item reaching one million pesetas in value.

The exports from the United States to Porto Rico in 1897 were \$1,983,888, in 1896 they were \$2,102,094, in 1892 \$2,856,003. They were of about the same character as the exports to Cuba—wheat flour being the largest item, \$516,188 in 1897, lard \$228,051, bacon and hams \$112,602, pickled pork \$152,411, beans and peas \$57,550, machinery \$69,462, no other articles of export in 1897 reaching as much as \$50,000 in value during the year.

In looking over the list of articles imported from Spain into both Cuba and Porto Rico it is apparent that the majority of them can be supplied by the United States and certainly will be if trade conditions between the islands and this country are made more favorable. In the case of Porto Rico, which it is announced will be held permanently by the United States, of course this government will have the arrangement of the customs schedules, and they can be made just as favorable as are deemed necessary. As for Cuba there is no doubt she will be under a government of her own sooner or later, but probably with the United States acting as protector, to insure peace on the island and protect her from foreign aggression. Under such circumstances the United States would stand in a more favorable position with her people and government than any other nation, and with the short distances between American and Cuban ports, trade between the two countries would naturally grow rapidly. But it may be some time before the results suggested above materialize, as the duration of a war is too uncertain to render predictions at all safe.

A NEW SYSTEM NEEDED.

The paper on "Education for the industrial classes" read by President Snyder of the Agricultural College before the National Educational Association, and published in another column, takes substantially the same grounds regarding popular education as has The Farmer. The particular points made by President Snyder are that the industrial classes must have more and better education to enable them to maintain themselves in the close competition that changed conditions have brought upon them, and the question is how this is to be done. At present less than 10 percent of the people avail themselves of the advantages of education beyond the age of 14 years, and only 5 out of a thousand enter college, yet the whole course of instruction is based upon every child reaching college and is necessarily not what it should be if the child does not. The President truly says: "Our present courses of study are arranged for the 10 percent who expect to take a higher education. Would it not be better to reverse this order and arrange our courses of study to satisfy the 90 percent who will not be able to enter the secondary schools nor the university?" That is the very question The Farmer has been asking for the past ten years. Our educational system is built upon a rickety foundation, and no matter how fine the superstructure, and beautiful the spire which tops the edifice, its faultiness may bring both to ruin. The spread of intelligence is a prime necessity in a government of the people, and a system of education that gives 90 percent a mere smattering of knowl-

edge, while 10 percent are fairly well educated, and only five in a thousand reach the college, is surely calculated to build up classes, and cause jealousies and antagonisms that will be more dangerous to the peace and well-being of the republic than the attacks of foreign foes. It is internal dissensions that we must guard against, and to give certain classes privileges and opportunities of which the great mass of citizens cannot avail themselves, is sure to result in trouble for the people and the government. The strength of a republican form of government comes from the belief that under it all citizens have equal privileges and opportunities, and stand on the same level before the law. Take away this belief and there is no substantial reason left why such a system should exist. Legislators and educators should always keep this in mind.

FREE RURAL MAIL DELIVERY.

The extension of rural free mail delivery, as authorized by the last Congress, is being pushed forward by the officials of the postoffice department. When it is known that one hundred and fifty seven petitions, from thirty-five states and territories, are on file in the department asking for extension to as many towns, and that special agents are at work in the states of New York, New Jersey, Pennsylvania, Massachusetts, Rhode Island, Vermont, North Dakota, Illinois, Indiana, Iowa, Kansas, and Colorado, laying out additional routes, it becomes apparent that the subject is assuming great importance through its rapid extension. We believe the time is not far distant when all well settled rural communities will enjoy the privileges of free delivery, and that it will have a most beneficial effect in several directions. It will keep the people better informed and in closer touch with other sections of the country. The extension of postal facilities is always followed by the spread of intelligence among the people, as they are enabled to follow closer the trend of public affairs, and thus become more interested in them. It is one of the most, beneficent functions of government to extend postal facilities to its people to the utmost extent possible, that all parts of the Union may be brought closer together, and understand better the conditions, sentiments and progress of all other sections. We therefore are pleased to see the postoffice department taking such an active interest in extending greater postal facilities among the farming communities. The people are equally entitled to the assistance of the government in this matter, so it should be made as general as possible.

The potato crop will be a light one in Michigan this season, the drouth, frosts, and other unfavorable conditions having injured the crop materially over a large area.

It is probable, from returns received from the new wheat crop, that Michigan will have the second largest one in her history. The State report places the yield at 16 bushels per acre. It looks now as if it might reach 18 bushels if the northern counties hold out as well as expected. We look for a crop of from 30 to 32 millions of bushels, or from 5 to 7 millions more than last season.

The London Agricultural Gazette says that one of the drugs used to preserve milk is formalin, a 40 percent solution of formic aldehyde. Its effect upon the digestive quality may be imagined from the fact that aldehyde is now used, under a new invention, to harden casein precipitated from milk, converting it into a substance named lactoform, which is expected to be used as a substitute for ivory, amber and ebony. The Gazette mentions cases of severe vomiting which occurred from the use of milk which contained this so-called "preservative."

A Blessing to Fruit Growers.

All farmers having fruit on their lands should read the advertisement, in this paper, of the fruit press manufactured by J. E. Davis & Co., Chicago, Ill. It can quickly be put in operation, will do a comparatively large amount of work, will not break and is easily cleaned. It has all the modern improvements; it is made of steel throughout except in a few cases where wood is absolutely necessary. The sills and beam, frame holding elevator platforms and leg and the grater are of fine steel and practically unbreakable. No stronger and better press can possibly be put together, and the prices of them are below those generally ruling on the market. Our readers should send for a circular.

Low Rate Niagara Falls Excursion via the Michigan Central.

Special excursion trains of fine coaches, parlor and sleeping cars will leave Michigan Central station at 9:00 a. m. and 10:20 p. m. Thursday, Aug. 4th, reaching the Falls at 4 p. m. and 5 a. m. Tickets will be sold at \$3.50 for the round trip, are good for return until Aug. 9th inclusive. Correspondingly low rates will also be made in connection therewith from all points in the State.

PRACTICAL SUGGESTIONS ON EDUCATION.

At the recent meeting of the National Educational Association at Washington, D. C., President J. L. Snyder, of the State Agricultural College, read a paper on the subject of "Education for the industrial classes," and the view he took of the subject was so sound and practical that we give it in full:

"Speaking in general terms, the industrial classes include farmers, mechanics and all other persons who work for a living with their hands. During the early history of this country they composed nearly the entire population, but in recent years the demand for trained men for the professions and other callings has lessened the proportion of those engaged in industrial pursuits. But this sturdy stock have been, and are still, the bone and sinew, the stay of this nation. They have made this country what it is and the future welfare of this nation is in their hands. If this country continues to be prosperous, the industrial classes must be intelligent and contented. Their contentment will depend very largely upon their intelligence and their intelligence will depend upon the facilities afforded them for acquiring an education. The industrial conditions have changed very much within the last quarter of a century, and the condition of the man who can simply work with his hands is steadily growing worse in this country, but for the man who is able to put brains into his work there were never brighter prospects than at the present time.

"There is only one way by which the industrial classes can keep abreast with the times and maintain the high position of honor which has always been accorded them in this country, and that is by more and better education. The average school life of the child in this country is but a small fraction over four years. Children belonging to our working classes receive very little over three years of school training. This means that 75 percent of these children never get beyond the third reader; 50 percent of them perhaps never reach it. But one out of eight, including all classes, attend school after the age of 14; one out of 31 after the age of 18, and but 5 out of each 1,000 enter college.

"The great problem to be solved by educators is how to keep this great body of children in school for a longer period of time. Our public school system, formed at a time when an education was scarcely thought necessary for the man who toiled for a living, has steadily led young people away from industrial pursuits. It makes no pretense to meet the special needs of the industrial classes. The object is not to train students for the ordinary walks of life, for the vocations to which they naturally belong, but it rather seeks to stimulate them to break away from present environments and seek a calling free from manual labor. If manual training and other practical subjects were introduced into courses of study two results would follow. First, pupils would be induced to remain in school longer, and second, the knowledge and training given would better prepare students for their life work.

"Our present courses of study are arranged for the 10 percent who expect to take a higher education. Would it not be better to reverse this order and arrange our courses of study to satisfy the 90 percent who will not be able to enter the secondary schools nor the university?"

NOTES AND QUERIES.

Pear Blight.—How can I stop blight in our pear trees? My trees seem to be dying by inches, a branch here and there all over the tree. Can anything be done to stop it? O. L. G., La Grange, Ind.—There is no reliable remedy. Removing twigs and branches as fast as they show blight has been recommended; applying ashes; various applications, spraying, etc. In our experience nothing stops the disease. We have just lost a splendid White Doyenne tree, 15 years old, that bore 4 to 8 bushels fine fruit annually. It commenced to blight last year and this year finished it.

Analysis of Farm Products.—I would like to know whether you have a book that gives the chemical analysis of the different farm products and other ingredients which fertilizer may be made of such as bran, ashes, lime, cobs, hen manure, etc., and what is the name of it and the price. If you have not got it can you please tell me where I can get it? Wm. H. C., Covington, O.—"Talks on Manures," by Joseph Harris, \$1.75. Also "Feeds and Feeding," by W. A. Henry, \$2.00. Either or both mailed from this office on receipt of price named. The former relates chiefly

to manures and fertilizers; the latter to feeds. Both give constituents of plants and fertilizers. Either will answer your purpose.

Carrying Capacity of Tiles.—What is the carrying capacity per minute of 6-in. tile having a fall of one inch per 100 feet? Please give rule for finding carrying capacity of tile. What rule governs friction? Wm. O. C., Ottawa, Ill.—The rule for computing velocity and capacity of tiles of various sizes and grades is somewhat complicated. French's "Farm Drainage" gives tables for 2, 3, 4, 5, and 8-inch tiles at grades ranging from 0.3 inch up to 10 inches. They are based on numerous careful and actual experiments. By these tables a 5-inch tile with grade (fall) of 1 inch per 100 feet will have a velocity of 2.20 feet per second and discharge 193,881 gallons in 24 hours, while an 8-inch drain, same grade, will have a velocity of 2.33 feet per second and discharge 525,647.7 gallons in 24 hours. By comparison—squaring each diameter and working the proportion—the 6-inch tile with 1 inch fall per 100 feet should have a velocity of 2.26 feet per second and discharge 287,433.8 gallons in 24 hours, or of about 200 gallons per minute. This assumes that the tile sections are fairly true and straight and that the drain is straight and with a true and uniform grade. In general it is true that the capacity of drains at any given time varies with the areas of their cross-sections, and this with the squares of their diameters; but the larger the tiles the smaller proportionate friction.

SUMMER FARMERS' INSTITUTES.

The following one-day institutes have been arranged for. We give the place of meeting, date, and State speaker.

Alcona county, Breggs Grove, Wednesday, August 3, Prof. Clinton D. Smith.

Alpena county, Long Rapids, Tuesday, August 2, Prof. Clinton D. Smith.

Calhoun county, Marshall, Tuesday, August 2, Dr. W. J. Beal.

Eaton county, Charlotte, Thursday, August 11, Prof. H. W. Mumford.

Gratiot, Ithaca, Friday, August 12, Dr. W. J. Beal.

Iscos county, Whittemore, Thursday, August 4, Prof. Clinton D. Smith.

Isabella county, Moss Landing, Thursday, August 11, Dr. W. J. Beal.

Kalkaska county, A. E. Palmer's farm, Wednesday, August 3, M. W. Fulton.

Manistee county, Arcadia, Wednesday, August 3, Prof. L. R. Taft.

Mecosta county, Higbee's Grove, Friday, August 5, Prof. L. R. Taft.

Newaygo county, Fremont, Thursday, August 4, Prof. L. R. Taft.

Oakland, Orion, Friday, August 12, Prof. C. D. Smith.

Oscoda and Lake counties, Reed City, Saturday, August 6, Prof. L. R. Taft.

Ottawa county, Riverside, Tuesday, August 2, Mr. G. H. True.

Sanilac county, Sanilac Center, Wednesday, August 10, Prof. Clinton D. Smith.

St. Joseph county, Findley, Wednesday, August 10, Prof. H. W. Mumford.

Tuscola county, Vassar, Friday, August 12, Prof. H. W. Mumford.

Van Buren county, Glendale, Thursday, August 4, Mr. G. H. True.

Wayne county, Wayne, Saturday, August 13, Mr. G. H. True.

Summer one-day meetings have already been held at Ida, Monroe county, and at Adrian and Hudson, Lenawee county.

NEWS SUMMARY.

General.

A murderous Chinaman at Oakland, Cal., in resisting arrest, took refuge in a powder magazine. When capture seemed certain, he blew up the magazine killing himself and five deputy sheriffs and constables.

At the Cleveland races, July 25, Lena M. lowered the world's pacing record for mares to 2:05½. The previous record was 2:05½. Searchlight lowered the record for 4-year-old pacers to 2:04½. The fastest previous record was 2:06½ by Be Sure and Ananias.

The government of Colombia, South America, has decided to pay the award of \$250,000 made by President Cleveland to Ernesto Ceruti, an Italian subject, in a claim made by him against the republic of Colombia, and they now consider the incident as closed.

The body of the last victim of the Cleveland tunnel disaster was recovered on Monday of last week, just a week from the date of the explosion. The tunnel has been cleared of gas and work will be resumed shortly, the contractors apparently having no difficulty in securing men.

Commissioner Blackburn of the Ohio Dairy and Food Department, last week reduced the working force of the department very materially by dropping seven names from the pay rolls. One of the deposed officials is Chief Clerk Geo. T. Crawford, of Massillon. The others are Fred W. Herbst, Columbus, drug inspector; L. P. Bailey, Tacomia, dairy inspector; A. P. Reynolds, Cleveland, dairy inspector; O. J. Barry, Kimbolton, inspector; T. F. Knouff, Caldwell, inspector; and F. G. Newhouse, Cincinnati, inspector. This cuts down the salary list several thousand dollars. The reduced appropriation given by the legislature last winter and the strained relations existing between Commissioner Blackburn and Attorney-General Monnett are two of the causes ascribed.

Lewis Warner, the Massachusetts bank wrecker, who mysteriously disappeared from Northampton, Mass., last April, was captured in Louisville, Ky., last Saturday.

The amount of his embezzlement is said to be about \$640,000. He will be taken back to Massachusetts for trial and will probably receive a long sentence, as the numerous depositors who have suffered because of his dishonesty are in no mood to be lenient with him. He was at the head of two strong banks and both institutions are now in the hands of receivers. All of Warner's property has been sold but was not sufficient to cover half of the defalcation. It is reported that when arrested he offered the defunctive \$10,000 if he would release him, but the officer was content with the \$1,000 reward which had been offered for Warner's capture.

War Notes.

The first Spanish flag captured in Cuba has been forwarded to Washington where it has been on placed exhibition.

The war tariff for Santiago was signed by the President and went into effect July 15. It adopts in general the privileged rates now given Spain there and makes that tariff uniform for all countries including the United States.

The mines in Santiago harbor were destroyed by the Americans last week. Recognized experts pronounced them less formidable than had been expected.

Gen. Shafter reported 306 new cases of fever sickness in the Santiago camp last Saturday. Some were clear cases of yellow fever but the majority were of various other fevers.

Gen. Duffield, of Detroit, who took a prominent part in the assault upon Santiago, is reported to be one of the yellow fever sufferers. He was sufficiently convalescent last Saturday to enable him to start for home for a short rest.

One of the latest reports concerning the future of the army at Santiago is that it will be returned to this country and sent to the mountains of North Carolina, for the purpose of ridding it of yellow fever. After that has been accomplished the troops may be used in a fall campaign against Havana.

Only 143 cavalry horses were surrendered at Santiago. A large number of the horses had been killed and used for food before the city fell. The scarcity of supplies in the city is made evident by Gen. Shafter's recent cablegram in which he states that he is feeding 11,000 of the prisoners who are waiting for transports to take them back to Spain.

Sylvester Scovel, the newspaper man who has confined his labors to Cuba almost exclusively for several years, wanted the honor of hoisting the American flag at Santiago, but Gen. Shafter refused. Scovel became enraged and struck the American commander. Gen. Shafter has caused him to be sent home and the privilege of returning to the island is denied him.

Lieutenant Hobson, of Merrimac fame, landed in New York last week and immediately made his way to Washington to consult Secretary Long and other officials concerning the feasibility of raising some of the vessels of Cervera's submerged fleet. His plans for raising the Cristobal Colon were so favorably received that a wrecking company has been engaged to execute them. Lieutenant Hobson will return to Cuba at once to superintend the work.

On Tuesday of last week, President McKinley issued a proclamation to the people of the recently acquired province of Santiago stating the purposes of this government in managing the affairs of the province and carefully instructing the officials in charge as to their duties and responsibilities during the temporary military occupation. All private property is to be protected; likewise churches, schools, etc. Public funds and the real property of the state may be seized but must not be destroyed except in case of military necessity. The proclamation was sent to Gen. Shafter who is still in command of the forces at Santiago. It is destined to be a historic document, as it is the first of the kind ever prepared by a president of the United States.

The announcement of Gen. Miles' departure for Porto Rico, which was given out early last week, proved to be somewhat premature. Apparently Gen. Miles and Admiral Sampson were not able to agree as to the number and kind of ships which should accompany the army of invasion. The delay thus occasioned was the cause of considerable chagrin and dissatisfaction at Washington and the two commanders were ordered to move at once. On Thursday afternoon of last week, Gen. Miles got away from Santiago with about 6,000 men, accompanied by a powerful fleet of war vessels. Since then nothing has been learned of his progress but it is believed that he reached Porto Rico some time Sunday and that his force was sufficient to effect a landing under protection of the guns of the war vessels. As Porto Rico is at present entirely without cable connection with the remainder of the world it is not likely that anything definite can be learned concerning his operations until his vessels succeed in picking up one of the severed cables. In the meantime several other expeditions have been fitted out and started for Porto Rico, Gen. Brooke embarking with a large force of the Chickamauga troops during the early part of this week.

FIELD NOTES.

Monroe Co., Ind., July 23.—We are having very dry weather; all streams and cisterns are getting low. Corn wilts badly every day but freshens up during the night. Very little plowing is yet done for wheat and if it does not rain soon it will be impossible to plow. Hay and oats about all up. The hay crop was only fairly good and oats were generally a light crop. Wheat threshing is in full blast and it is making a better yield than was expected. One man had 50 acres that made an average of 30 bushels to the acre; there was one 10-acre field out of the 50 that averaged 41 bushels per acre. It is generally making an average of 15 to 25

bushels. There is very little wheat being marketed; 65 cents per bushel is the price offered and everyone that is not compelled to sell is holding hoping to get a better price later on. The apple crop is almost an entire failure. As the weeks pass the prospect is more discouraging. Cattle are selling at 4c per lb., sheep 3 to 3½c, lambs 4½c, new hay \$6 per ton.

Labette Co., Kansas, July 20.—Shock threshing is about all done with very poor yield of inferior quality. One-half of the wheat is fit only for feed and the yield runs from two to eight bushels per acre. Oats were injured by rust and are threshing out from eight to forty bushels per acre. Early sown oats are of fair quality but those sown late are very light. Corn looks well where not injured by bugs but is needing rain badly now, and if rain does not come soon will be a short crop. We have had no rain since June 25, and corn is in a critical condition. Millet was good. Kafir corn and sorghum will be good if rain comes soon. Hay, both wild and tame, good crop. There will be a fair crop of apples but peaches are scarce and of inferior quality. Dealers are paying from 30 to 52 cents per bushel for wheat, 30 cents for corn and 15 cents for oats. Hogs \$3.25 per hundred pounds. Horses and mules are down; milch cows, \$25 to \$40. Feeders and calves still bring good prices. The failure in wheat with the low prices and a prospect of a short crop of corn makes farmers feel blue, as a rule. At the same time landlords are demanding more and higher rent from their tenants and tenant farmers are thus beginning to reap the benefits of the false reports sent out from this state by designing men, of the wonderful prosperity of the Kansas farmer. I have said before that these reports would redound to the injury of the Kansas farmer and the good of her speculators. It is this now.—M. E. King.

Albany Co., N. Y., July 20.—The drouth is at last broken and rain is now falling in torrents. The frequent hard showers of yesterday and today have been the first in about five weeks and crops were on the verge of ruin, such as early potatoes and corn and some pieces of oats. Some cannot recover the splendid start they made in early spring. Crops, June 1st, looked splendid, but today there is still an indication of a good harvest though the past few weeks have been unfavorable. The farmers are very thankful for today's rain, as it means a good start for late crops and buckwheat and there has been a large quantity of the latter sown. The hay and rye harvest are nearly through. Some farmers are through and the hay put in so far up to this rain has been of the finest quality and no unfavorable weather to affect curing it, a very heavy crop of hay has been gathered and much of last year's crop is still on hand and prices will no doubt be very low. The rye crop has not been as good as last year but yet a fine yield will be harvested. Apples and all fruits are dropping and but very few remain on the trees. Only about 35 percent will be yielded this season. Prices are as follows: Wool 23c; cows \$25 to \$40, horses \$40 to \$125; wages \$1 to \$1.50 per day with board; oats 28 to 30c; corn 41 to 48, rye 55 to 60c, potatoes \$2.50 to \$3 per barrel, eggs 12 to 14c, butter 12 to 18c, honey 8 to 12c.—Geo. H. Townsend.

BUSINESS CONDITIONS.

Dun & Co.'s weekly review of trade says that the decrease in shipment of grain has caused a loss in earnings of granger and Pacific railroads. So much grain has been shipped during the past year that this was inevitable. Business is larger than ever before in the stagnant midsummer season, and manufactures share in it. In no other year has trade in boots and shoes for the three weeks of July been so large. There is an increased demand for woolen goods, and the number of factories at work increases, though satisfactory prices are not yet assured. Only 5,233,200 pounds of wool were sold last week and in three weeks only 12,870,900 at the three chief markets, of which 8,629,700 were domestic, against 34,124,700 last year and 23,374,550 in the same weeks of 1897, 18,000,000 being domestic.

With abatement of foreign needs and prospects of excellent crops in many foreign countries wheat has declined during the week 3 cents in price, notwithstanding exports from Atlantic ports amounting to 1,987,082 bushels, flour included, against 1,516,997 bushels last year, and from Pacific ports 577,700 bushels against 89,500 last year. Total exports for three weeks have been 7,399,200 bushels, flour included, against 5,194,400 last year. Corn still goes abroad in astonishing quantities, all the circumstances considered, exports having been in three weeks 5,077,800 bushels, against 6,635,300 bushels last year. The price has not changed, in spite of the decline in wheat. Cotton crop reports are sufficiently favorable to depress prices an eighth during the week without other influence.

Failures for the week have been 297 in the United States against 277 last year and 17 in Canada against 28 last year.

SEED WHEAT. We have for sale Dawson's Golden Chaff Seed Wheat. Price \$1 per bu. including bag. Mail samples sent on application. J. JENKS & CO., Sand Beach, Mich.

TORONTO EXPOSITION AND AGRICULTURAL FAIR. Aug. 29 TO Sept. 10. The greatest Live Stock Show on the continent. Excursions from all points. For programmes address H. J. HILL, Toronto, Canada.

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HOME CHATS WITH FARMERS' WIVES.

SOME HOT WEATHER HINTS.

Nothing adds more to the attractiveness of a country home than wide, roomy porches. To dress these out in the prevailing mode is not necessarily expensive. A breadth or two of carpet or matting or a few rugs makes a great addition in the appearance of the floor, while pretty porch pillows may be made out of material already at hand in almost any house. Gingham, print, turkey red calico, even cheese cloth makes up nicely and if of dark or medium shades does not show soil easily. If the goods is heavy enough the filling may be put right into it; but ordinarily an inner lining or "tick" will be required. The filling may be hay, chaff, lawn clippings, pine needles or excelsior. This is also a good place to put some of the hen feathers which are usually saved and accumulate so rapidly in most farm houses.

If one has a nice hammock, a good place to hang it is in the porch, if sheltered from the sun. As money to buy hammocks is not always forthcoming a good one can be made at home—one that can be made quite ornamental and, so far as comfort goes, answers every purpose. Take apart a clean barrel and weave the staves together with either wire or small rope; it will require about 40 feet. Paint nicely and furnish with plenty of pillows. A very pretty one is painted white and has red pillows. A mattress made of an old quilt, folded to the right shape, then tacked together and covered with turkey red makes a somewhat softer resting place than the bare wood. Such a hammock can be made by any woman and furnishes the best possible place for the siesta which every housewife should take during hot weather. After dinner work is finished take a bath if nothing better by way of conveniences for this is at hand than a sponge and a bowl of tepid water. Put on clean clothing throughout, then lie in the hammock and take a nap. One awakes refreshed and strengthened. The children? They ought to have a nap too; but if, as in the case of some children, they cannot be coaxed to go to sleep they should be left in the care of an older child or at any rate given to understand that mother is not to be disturbed. I have known persistent effort by way of blankets and pillows on the floor to avail in getting restless little ones to take a mid-day nap when at first they rebelled most strenuously any attempt to make them go to sleep.

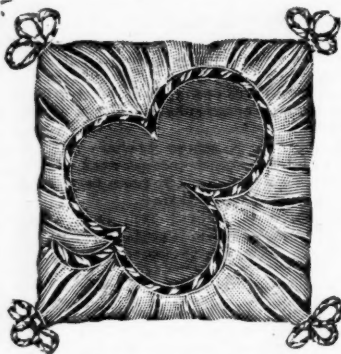
We are all such creatures of habit that a few days of observing a certain hour as one of rest and quiet will usually result in sleep coming easily and naturally at that time. Children should be encouraged to have a mid-day nap just as long as possible. They require it more than ever these hot days. One restless little four-year-old could only be coaxed into quietude by being induced to get her dolly to sleep. She lay down contentedly if a certain battered imitation of a baby was hugged to her breast. Fond little mother, her self-sacrifice has begun already when she consents to lie still that dolly may have a nap.

I think nothing serves in greater degree to lighten the wearisomeness of housework during hot weather than the use of an oil or gasoline stove. It is the heat that wears on the housewife, the bending over a hot cook stove on a hot day that tries her more than the labor. Even a small oil stove to be had at the expense of only a few shillings will be found a great saving of heat, while the modern gasoline stove is indeed a luxury. Five cents a day will furnish fuel for such a stove in doing all the cooking and baking for a large family, and I know that in many families the amount of wood burned daily is far beyond that sum in value. The danger in using gasoline is by some overestimated, but the supply tank should never be filled in a room where there is either a fire or a lighted lamp. Better do that out of doors, and should any gasoline be spilled wipe it up and throw the cloth outside until all odor has evaporated.

Most accidents from its use result from carelessness in spilling the fluid and then striking a match before the fumes have evaporated. With ordinary precautions there is no more danger in the use of gasoline stoves than in the use of kerosene lamps.

AN ELEGANT SOFA PILLOW.

The following design illustrates a sofa pillow that is very easy to make and very handsome. Properly speaking, it should



be constructed of canary-yellow silk, and drawn in folds and wrinkles. A clover leaf should next be cut from black velvet, applied to the center of the pillow and the edges of it outlined with heavy black and yellow silk cord, a stem to the leaf being made from this as shown. Then form some of the cord in trefoils at the corners of the pillow, and your work is done, and very prettily, too. As other colors which match well can also be used, one can have a number of the pillows for the same or different rooms, if desirable, making quite a diversity of tints in their pillow collection.—F. O. S.

THE SHIRTTWAIST AND ITS ACCESSORIES.

Again this season the shirtwaist is in vogue to gladden the heart of the city and country girl whose resources may be limited. Half a dozen shirtwaists, particularly if made at home, will cost so little and yet vary the costume for the entire summer, and the careful girl can make them to duty for a second summer.

It is a mistaken idea to think that the shirtwaist need not fit well. The better the fit, the more stylish will be the result, no matter what the material, cheap or expensive. The wise girl will resurrect some old shirtwaist which has "fit beautifully," and will rip it to pieces, press it and use it as a pattern, instead of buying a new pattern which will have to be fitted to her before it will be just right. The body of shirtwaists is cut precisely the same this season as last, with the straight or curved yoke in back. A very few are cut with a blouse front, but as these are not so trim and graceful, they will not be very popular.

Since the sleeves are cut somewhat smaller than last year's, a sleeve pattern can be purchased separate from the shirtwaist pattern. It is more sensible not to cut a shirtwaist so that it will hang below the waist line. Your skirt will fit better over your hips if you do not have this added, besides which you will save almost a yard of material. Cut the shirtwaist short—allowing for shrinkage—and put it on a belt of the same material. This belt can be hooked or buttoned—for a wash waist buttons are preferable—on to the skirt, and in this way prevent any of that unpleasant gaping of skirt and waist.

A black or dark colored silk shirtwaist unlined is a great comfort in summer. Some days are so unbearably hot that any sort of a lined waist is torture, and yet so often one must make some pretense of being dressed up. A black silk shirtwaist is the waist for such occasions. It will look pretty and dressy and will be almost as cool as a lawn shirtwaist. Plain and figured India silk, surah, moire velour, or Bayadere moire make up into very stylish waists and cost from 50 cents to one dollar per yard.

Much depends upon the accessories of the shirtwaist. For the fine washable shirtwaist, the stiff white linen collars and cuffs are preferable. They are much cooler than the tight neck ribbons worn, look more neat, are very stylish, and freshen up a shirtwaist that is not absolutely fresh. I advocate the use of the white linen adjustable cuffs as well as collars, not only because of their neat appearance, but because they are more economical for shirtwaists of delicate tints which will not stand many washings during the season. The cuffs and collar of a waist soil first, and if these

happen to be adjustable, they can be removed and clean ones attached, leaving the waist perfectly fresh, where it would otherwise have had to be washed because of the soiled wrists and collar. With the linen collar is worn the narrow club tie, as it is called; pretty narrow plaid ribbons tied in a bow; wide ribbons brought once or twice around the neck and tied four-in-hand with the ends streaming; soft nets with lace edgings tied around the neck in a bow at the front, and many made-up knots of chiffon, liberty silk, etc., which can be purchased for twenty-five cents apiece.

These same accessories can be used for the silk shirtwaist, and a black silk waist can be made to look new many times by a change in the collar and style of the neckwear.

As I have said before, it is far more sensible to buy the dainty materials and make up your own shirtwaists. You will have a better fit, better material, and twice the number because of the difference in cost, besides leaving enough over to buy some of the dainty neck accessories.—Emma Louise Hauck Rowe.

CLOTHING THE LITTLE BOY

The average small boy does not have much use for a coat during the summer months, and if the mother is economically inclined, she can make the little trousers at home, so the expense of clothing to him will be small. Old trousers are given a new lease of life by mending them neatly. If they are frayed at the edges, overhaul them, replace the missing buttons, and strengthen the thin places by placing pieces of cloth under them and darning them, making the stitches as nearly invisible as possible. When he comes in with that awful tear caused by climbing a tree or catching his trousers on a nail, rip the seams on either side, and set a patch neatly, taking care to match the twill, stripe or check, and carefully press it.

It is usually an easy matter to make a pair of pants for the little boy from a pair that his papa has decided not to wear any more. Rip them apart and wash them if they need it. It is likely that they are faded, even though the material is quite good, and boys are usually as sensitive about wearing clothing that looks shabby as their sisters; so after the goods are rinsed, and while they are still wet, dye them navy blue, seal brown, or black with prepared dye. Press the goods on the wrong side and it will look as bright and fresh as new. Patterns can be bought for a trifling sum, or an old pair of trousers that fit nicely can be taken apart, and a pattern cut from the pieces. Put the pockets in neatly and press all the seams. The success or failure of the amateur depends in a great measure upon the pressing. Make the bands in which the button holes are worked of strong drilling and, when the pants are worn out, these can be taken off and used for another pair, which is quite a saving as far as the work of making them is concerned. Provide your boy with several pairs of these made-over pants, then when the hot days come he can wear a white muslin or a calico waist, and with a pretty necktie and white hat, will look cool and comfortable.—E. J. C.

FEMINE FADS AND FANCIES.

The jewelry of the up-to-date feminine must symbolize the present conflict. Patriotic emblems of every conceivable variety abound with prices to suit the mendicant and the millionaire.

The latest hat pins are mounted regimental or navy buttons. There are stick pins, bar pins, cuff and shirtwaist sets in red white and blue enamel, or engraved with warships, Cuban or American flags. Patriotism is displayed by military buck-

les, one in front, at back and at either side of the belt. Bangles take the form of guns and cannons, pencils of tiny swords, and "my lady's" perfumery bottle is a canteen in miniature, her pocket-book a knapsack.

A novelty is a pocketbook with metal corners of Cuban and American flags. Chatelaines are engraved with ships and flags, brooches represent battleships and other insignia of war. Neck and eye-glass chains are decorated at intervals with tiny gold or tri-colored enameled flags; even the jaunty jacket must show army or navy buttons.

Last season tie strings for bonnets were monopolized by elderly ladies; this year even young misses may wear broad bonnet strings; one may be of lace or chiffon, the other of ribbon. Whatever the material, one must be black and one of a different hue. The brunette may wear black and red, the blonde black and blue or violet.

Short and elbow sleeves have gone out. Thin fabrics are made up without sleeve linings, are puffed, shirred or tucked from shoulder to waist.

Another feminine fad is pillows or cushions. Sofa pillows, hammock pillows, piazza pillows, floor pillows, yacht pillows, etc., etc., filled with clover blossoms, hops, pine needles, milkweed, shredded paper, feathers or down, and covered with organdy, denim, cretonne, linen, white duck, etc.

The latest housekeeping fad is sunshine fruit, a method by which small fruits are kept without canning. Cook any quantity of fruit ten minutes in three-quarters its weight of sugar, and set in the sunshine until the liquor turns to jelly, then put in jelly cups. The process can be completed in two or three days. Another method is to scald the fruit in its weight of sugar, set in hot sunshine twenty four hours, then can cold.

Mrs. S. T. Rorer, who has been considered one of the highest authorities on the cuisine, says in the Ladies' Home Journal that "the small fruits were not made especially for the use of man. Cherries, blackberries, raspberries, and currants seem marvelously adapted to the bills and digestive organs of birds. Strawberries were certainly made for those reptiles which keep very close to the ground. * * * We consider the milk of the cow our especial property, when really nature intended it as food for the calf."

The patch-work quilt to be used with old-fashioned bedsteads, is a revived feminine fancy. The newest pattern is called "Red, white and blue;" it resem-

RED	WHITE	BLUE
WHITE	BLUE	RED
BLUE	RED	WHITE

FIG. 3.

bles the "log cabin." In the center of a square of any preferred size baste a small flag, sew on each side an inch strip of white cloth, putting the edges together the same as the velveteen is sewed on a dress skirt; turn the edges of the last pieces on over the foundation square and baste down. Put around this an inch wide strip of red, and then the same of blue until the square is filled. These blocks sewed together form the cloth torn in strips of irregular length quilt, to be lined with red, white and blue and sewed together. The diagram (Fig. 3) shows a nine patch with the national colors; other combinations will readily be suggested.

We are indebted to the Delineator for hints and suggestions.—Claribel.

ENAMELINE

THE MODERN  STOVE POLISH

Quick Shine, Little Labor.

NO OTHER COMPARES WITH IT. IT'S THE BEST.

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The Markets.

WHEAT.

The course of the market has been steadily downward, although receipts have not been up to expectations. The visible supply is now at a very low point, in fact the lowest on record at this season. It is quite apparent that farmers are not inclined to accept present prices for their crop, and will not therefore market it freely. It is best, for the future of the market, that they should not rush their grain forward too fast, as it would simply depress prices below their normal range, and when there was an improvement in values farmers would have nothing to sell. At prices now ruling wheat is getting to a low range, with probabilities favoring a further decline.

The following table exhibits the daily closing sales of spot wheat in this market from July 4 to July 27 inclusive:

	No. 1 White.	No. 2 Red.	No. 3 Red.
July 4.....	88	90	86
" 6.....	88	90	86
" 8.....	88	90	86
" 9.....	88	90	86
" 11.....	78	83	79
" 12.....	76	78	74
" 13.....	76	77	73
" 14.....	75 1/2	76 1/2	72 1/2
" 15.....	75 1/2	77	74
" 16.....	75	76 1/2	73 1/2
" 18.....	74	77 1/2	74
" 19.....	75	78	75
" 20.....	75	77 1/2	75
" 21.....	75 1/2	77	75 1/2
" 22.....	74 1/2	76	74 1/2
" 23.....	72 1/2	74 1/2	73
" 25.....	69 1/2	72 1/2	69 1/2
" 26.....	65 1/2	69 1/2	66 1/2
" 27.....	64 1/2	67 1/2	64 1/2

The following is the record of the closing prices on the various deals in futures each day during the week.

	July.	Aug.	Sept.
Thursday.....	76 1/2	70 1/2	69 1/2
Friday.....	75 1/2	70 1/2	69
Saturday.....	73 1/2	70	69 1/2
Monday.....	72 1/2	69 1/2	68 1/2
Tuesday.....	69 1/2	67 1/2	67 1/2
Wednesday.....	67 1/2	66 1/2	66 1/2

The visible supply of wheat in the United States and Canada on Saturday last was 9,382,000 bu., as compared with 10,461,000 bu., the previous week, and 16,032,000 bu. at the corresponding date in 1897. The decrease for the week was 1,079,000 bu.

The receipts from day to day practically govern the price of cash wheat. Speculative dealing is reduced to extremely light proportions.

Latest estimates of the Kansas crop place it at 55,000,000 bu. At first the figures were 100,000,000 bu., then 70,000,000 bu. If Kansas can grow a big crop of wheat it is also certain she can produce a great crop of estimators.

The Italian wheat crop is said to have sustained considerable damage from recent storms.

Michigan's wheat crop generally overruns estimates. In nearly every other State estimates overrun the crop. There is less wind but more business in Michigan than Kansas.

The world's shipments of wheat last week were as follows: America, 2,128,000 bu.; Russia, 1,489,000 bu.; India, 1,152,000 bu.; Argentina, 24,000 bu.; Roumania, 140,000 bu.; other countries, 176,000 bu. Total, 5,100,000 bu.

Latest advices from South Russia report most favorably of crop prospects in those districts. Spring wheat and barley are being mentioned as looking particularly well.

The Minneapolis Record says: It will be remembered that in September, 1897, there was a wild scramble for wheat and that every corner of the earth was scoured because of a possibility of supplies being cut off. Now it is possible that it is the settled policy among foreign importers that they shall not be caught napping again. This being true and that the normal stocks on hand are to be re-established on the old basis, there is not too much to replenish those stocks; in fact, the world may still be short. Hence it may be good judgment in ignoring the present speculative condition or it may not. Wheat for the present has but few friends, but there is that intrinsic value in it that will make itself felt later—and perhaps sooner.

DAIRY PRODUCTS.

BUTTER.

There has been an active market the past few days, with an advance in best grades of creamery. Really good dairy is also in active demand, but so far no advance in prices has been made, while common to fair is quiet and slow of sale. Quotations are as follows: Creamery, 17 1/2 to 18 c.; fancy dairy, 14 to 15 c.; fair to good dairy, 11 to 13 c.; common, 9 to 10 c.; low grades, 7 to 8 c. per lb. The Chicago market shows a decided improvement in tone, and the advance noted in quotations is well sustained so far. All interior markets have also advanced, and the position seems to be a strong one for sellers. Quotations are as follows: Creameries, extras, 17 1/2 c.; firsts, 16 to 17 c.; seconds, 13 1/2 to 15 c. Dairies, extras, 15 c.; firsts, 13 c.; No. 2, 12 c. Ladies, extras, 12 1/2 to 13 c. Packing stock, 11 to 11 1/2 c. The New York market is also firm and higher, the advance on creamery being 1 c., while dairy of good quality is moving freely at somewhat higher values. Quotations are as follows: Western creamery 14 to 18 c.; Elgin, 18 c.; western factory, 11 to 13 1/2 c.; imitation creamery, 12 to 15 c.; State dairy, 12 1/2 to 16 c.; State creamery, 14 to 17 c. per lb. At Elgin this week fancy creamery is selling at 17 1/2 c. per lb., and firm at the advance.

CHEESE.

The market has held quiet and steady since the advance noted a week ago. The best full creams range from 7 1/2 to 8 c. per lb., according to condition and quality. At Chicago there has been no change in quotations, and the market rules quiet and steady with no features of interest. Quotations range as follows: Young Americas, 7 1/2 to 8 1/2 c.; cheddars, 7 to 7 1/2 c.; Swiss, 8 to 10 1/2 c.; Limburger, new, 5 to 7 c.; bricks, 5 to 8 c. The New York market shows a substantial advance during the week and is firm at current prices. Quotations are as follows: Large white, 7 1/2 c.; small white, 8 1/2 c.; large colored, 7 1/2 c.; small colored, 8 1/2 c.; light skims, 6 to 6 1/2 c.; part skims, 4 1/2 to 5 1/2 c.; full skims, 2 to 2 1/2 c.

DETROIT PRODUCE MARKET.

Detroit, July 28, 1898.

FLOUR.—Quotations on jobbers' lots in barrels are as follows:

Straights.....	\$4.25
Clear.....	4.00
Patent Michigan.....	4.75
Low Grade.....	3.50
Rye.....	3.00

CORN.—The visible supply of this grain on Saturday last in the United States and Canada was 18,671,000 bu., as compared with 19,987,000 bu. the previous week. Quotations in this market are as follows: No. 2, 36c.; No. 3, 35 1/2 c.; No. 2 yellow, 36 1/2 c.; No. 3 yellow, 36c. per bu.

OATS.—The visible supply of this grain in the United States and Canada on Saturday last was 4,270,000 bu. as compared with 5,572,000 bu. the previous week. Quotations are as follows: No. 2 white, 28c.; No. 3 white, 27 1/2 c.; No. 2 white for August delivery, 28 1/2 c. per bu.

RYE.—The visible supply of this grain in the United States and Canada on Saturday last was 484,000 bu., as compared with 460,000 bu. the previous week. No. 2 has sold the past week at a range of 45 to 45 1/2 c. per bu.; 45c. is now the regular quotation.

BEANS.—July and August futures quoted at \$1.08 per bu.; October delivery at \$1.04. Market firm.

FEED.—Quotations on jobbers' lots are as follows: Bran and coarse middlings, \$14; fine middlings, \$15; coarse cornmeal, \$14; cracked corn, \$15; corn and oat chop, \$15 per ton.

LIVE POULTRY.—Broilers, 12c. per lb.; fowls, 7 1/2 c.; ducks, 5c.; spring ducks, 7c.; turkeys, 8 to 9c. per lb.

EGGS.—Fresh receipts, 11c. per doz.; candled, 12c. per doz.

BERRIES.—Huckleberries, \$2 to \$2.25; black currants \$1.50; red currants, \$1 to \$1.25; red raspberries, \$1.50 to \$2; black raspberries, \$1.25 to 1.50; blackberries, and Lawtons, \$1.75 to \$2 per bu.

DRIED FRUIT.—Quoted as follows: Evaporated apples, 8 1/2 to 9c.; evaporated peaches, 10 to 12c.; dried apples, 4 1/2 to 5c.; apricots, 7 1/2 to 12c. per lb.

BALED HAY.—Best timothy is quoted at \$9.50 per ton.

APPLES.—New quoted at \$2 to \$2.25 per bbl.

MAPLE SUGAR.—Pure quoted at 10 to 11c. per lb.; mixed 8 to 9c. per lb.

HONEY.—Quoted at 9 to 11c. per lb. for ordinary to best.

TALLOW.—Quoted at 3 1/2 to 3 3/4 c. per lb.

CABBAGES.—Selling at \$2.50 to \$3 per 100.

POTATOES.—New are quoted at 60 to 65c. per bu. Quality very poor and crop prospects are unfavorable.

HIDES.—Quotations are as follows: No. 1 green, 7 1/2 c.; No. 2 green, 6 1/2 c.; No. 1 cured 9c.; No. 2 cured, 8c.; No. 1 green, calf, 10c.; No. 2 green calf, 8 1/2 c.; No. 1 kip, 7 1/2 c.; No. 2 kip, 8c.; sheepskins, as to wool, 90c. to \$1.25; shearings, 12 to 20c.

PROVISIONS.—We note an advance in mess pork and kettle lard, while compound lard has declined. Quotations are as follows: Mess pork, \$10.75 per bbl.; short cut mess, \$11.50; short clear, \$11.25; compound lard, 5 1/2 c.; family lard, 6 1/2 c.; kettle lard, 7 1/2 c.; smoked hams, 8 1/2 c.; bacon, 8c.; shoulders, 5 1/2 c.; picnic hams, 6c.

COFFEE.—Roasted Rio, ordinary, 9c.; fair 11c., Santos, good 14c., choice 18c.; Maracaibo, 20 to 25c.; Java, 26 to 30c.; Mocha, 28 to 32c.; package coffee sold on the equality plan on a basis of 95c. to \$1.05, less 75c. per 100-lb. case in New York.

OILS.—Linseed oils and turpentine are lower, while No. 1 lard oil has declined. No other changes. Quotations are as follows: Raw linseed, 38c.; boiled linseed, 40c. per gal. less 1c. for cash in ten days; extra lard oil, 51c.; No. 1 lard oil, 30c.; water white kerosene 8 1/2 c.; fancy grade, 11 1/2 c.; deodorized stove gasoline, 8 1/2 c.; turpentine 33 1/2 c. per gal in bbl lots.

HARDWARE.—Latest quotations are as follows: Wire nails, \$1.50; steel cut nails, \$1.45 per cwt new card; axes, single bit, bronze, \$5; double bit, bronze \$8.50; single bit, solid steel, \$6; double bit, solid steel, \$9.50 per doz.; bar iron, \$1.35; carriage bolts, 75 percent off list; tie bolts, 70 and 10 percent off list; painted barbed wire, \$1.60; galvanized do., \$1.90 per cwt.; single and double strength glass, 80 and 20 percent off new list; sheet iron, No. 24, \$2.50 per cwt.; galvanized, 75 and 10 off list; No. 9 annealed wire, \$1.40 rates.

OUR BUFFALO LETTER.

EAST BUFFALO, July 25, 1898.

After Monday there were 6 or 8 loads of cattle for the week. The demand was active and prices full strong with Monday. The sheep and lamb trade was all right for top grades, but dull and lower on the under grades. Hogs sold fairly well for the week. The market today opened with an active demand for desirable butcher cattle at about last week's prices. The total offerings were 165 loads, with a fair proportion of export,

and 23 loads of Canada stockers. The export trade was late in opening and about 10 cents lower than last week. The cow and springer trade was about the same as last week with about 18 loads on sale. Calves were in large supply, about 700 head, fair demand and lower.

Export steers, good to best, 1380

to 1500 lbs. \$5.00 to \$5.10

Butchers' steers, good to best 900 to

1200 lbs. 4.75 to 4.95

Butcher bulls, common to good, 2.75 to 3.65

Bologna bulls, common to good, 3.10 to 3.50

Feeder bulls, good to best, 3.50 to 3.75

Stock steers, good to best, 600 to 800

lbs. 3.90 to 4.25

Heifers, fair to best, 3.75 to 4.50

Heifers, common, 3.50 to 3.75

Fat cows, good to best, 2.80 to 3.85

Fat cows, common to good, 3.10 to 3.65

Fresh milkers, good to best, 40.00 to 45.00

Springers, good to best, 30.00 to 38.00

Calves, good to extra, 5.50 to 5.75

Calves, common, 3.50 to 4.00

The offerings of sheep and lambs were light, only 20 loads, but the quality was generally of the undesirable kinds—on the bulky order. Sheep in light supply, good demand and steady, and choice to extra ewes and wethers full strong, but bucks 25 to 50 cents lower. Choice to extra ewes and wethers were quotable at \$6 to \$6.50; good bucks, \$5.25 to \$5.75. Sheep, choice to extra, \$4.50 to \$4.75; good to choice, \$4 to \$4.50.

The hog market opened steady with 25 loads on sale. Heavy sold at \$4.15; Yorkers \$4.10 to \$4.15; pigs, \$4.10 to \$4.12 1/2; roughs, \$3.50 to \$3.70; stags, \$2.75 to \$3.25. As the day advanced the market improved. The bulk of the Yorkers and pigs sold at \$4.10, and medium at \$4.15.

The horse offerings were about 300 head; a fair attendance of buyers. The market generally was unchanged except on common grades which were weak and irregular.

Drivers, good to best, \$9 to \$140

Drivers, common to good, 40 to 65

Draft, good to best, 115 to 135

General purpose, 40 to 75

Exporters, 90 to 125

Cavalry, 125 to 130

REPRESENTATIVE SALES.

Cattle.—24 butcher steers, 1065 lbs, \$4.75; 10 stockers, 850 lbs, \$4.25; 10 butchers, 916 lbs, \$4.30; 9 stockers, 531 lbs, \$4.10; 9 do, 503 lbs, \$4.1; 7 stockers, 571 lbs, \$4.15; 23 cows, 1044 lbs, \$3.50; 27 butchers, 1230 lbs, \$4.75; 22 stockers, 577 lbs, \$3.90; 6 cows and 6 calves, \$40; 27 butchers, 1230 lbs, \$4.75.

Sheep and Lambs.—The sales were mostly in small bunch lots; 67 sheep, 93 lbs, \$4.60; 18 do, culs, 123 lbs, \$3.85; 61 lambs, 72 lbs, \$5.75; 35 do, 69 lbs, \$5.75; 25 do, 72 lbs, \$5.90; 55 sheep, 93 lbs, \$4.40.

Hogs.—229 pigs, 105 lbs, \$4.10; 59 Yorkers, 144 lbs, \$4.10; 113 medium, 212 lbs, \$4.15; 50 Yorkers, 155 lbs, \$4.10; 57 pigs, 117 lbs, \$4.10.

OUR CHICAGO LETTER.

CHICAGO, July 25, 1898.

The announcement that the railroads would advance rates on live stock from Missouri river points on July 25 to their former figures helped to stimulate the shipments of cattle last week and 53,100 head arrived here, compared with 50,603 the preceding week, and 46,989 a year ago. The average quality of the native cattle was better than at any previous time this year, and an active general demand resulted in a further advance of about 15c in beef steers, sales ranging at \$4.20 to \$4.50 for the commonest up to \$5 to \$5.50 for the best lots averaging 900 to 1,700 lbs. The greater part of the cattle sold at \$4.75 to \$5.25, few going as low as \$4.50, while a goodly number brought \$5.30 to \$5.35. In the absence of sufficient numbers of fat dry-fed steers of light weights, buyers were obliged in many instances to substitute choice cattle weighing anywhere from 1400 to 1700 lbs, and they sold at the same prices as the heavy-weights. Good cattle are expected to sell well for the next 60 days, and feeders should make their stock fat before shipping. Grassy light native steers, which show short feeding will naturally suffer in price from coming into competition with the grass Texas cattle, which are coming here at the rate of about 6,000 head a week. For the same reason native canning cows are 15 to 25c lower than a week ago, with sales at \$2.15 to \$2.85, but they are still higher than a year ago. There is no weakening in the better class of cows, and choice heifers bring \$4.25 to \$4.85. Bulls sell at \$3 to \$3.50 for bolognas, a few selling at \$2.75 to \$2.85, and export bulls bring \$3.75 to \$4.25. Prime heavy stags sell at \$4.40 to \$4.80, and veal calves are active at \$5 to \$6.40, with selected stock steer calves at \$7. Milk and springers now command \$30 to \$50 each. The stocker and feeder trade is slack at \$3 to \$4.80, lower prices failing to stimulate the demand. Grass Texas steers sell at \$3.75 to \$4.25, and fed Texans sell up to \$4.60 to \$5.

Hog receipts last week were 168,400 head, against 160,192 the week before, and 144,051 a year ago. There was a very good demand most of the time, eastern shippers taking fair numbers of choice rather heavy hogs, but the Chicago packers were disposed to hold back at times in order to put prices lower. The yellow fever argument was used as a "bear" factor, and sometimes with decided effect. Heavy sows carloads of hogs sold especially badly, and the time of year is about at hand when it is usual to see a widening range between prices for good and common hogs. At this time overloading cars is sure to cause many deaths of hogs in transit, the hot weather being particularly trying on heavy lard hogs. Commission merchants are advising country shippers to place wet sand on the floors of the cars during the hot weather in place of dry sand. Many farmers are too busy harvesting to attend to shipping stock, but enough hogs are being sent to market to meet all wants. Light weight hogs continue to sell at a considerable discount, whereas at this time in past years they commanded a pre-

mium over their heavy brethren. With the exceptions of one and two years ago, hogs are selling at very much lower prices than at corresponding periods in the last seven years. Hogs are now selling largely at \$3.90 to \$4.02 1/2, sales being made of lots averaging 246 to 400 lbs at \$3.75 to \$4.07 1/2, lots averaging 196 to 245 lbs. at \$3.75 to \$4.02 1/2, lots averaging 145 to 195 lbs at \$3.70 to \$3.97 1/2, and pigs at \$3 to \$3.80. Hogs are 5c lower than a week ago.

Sheep and lamb receipts last week were 58,073 head, against 50,468 the week before, and 66,255 a year ago. Kentucky and eastern spring lambs arrived freely, and prime flocks averaging 73 to 82 lbs. sold at \$6.60 to \$6.45. Other lots of lambs found buyers at \$4 to \$4.50 for common 42 to 62-lb lots up to \$6 to \$6.50 for good to choice 63 to 77-lb offerings, and some feeding lots brought \$3.40 to \$3.65. Native sheep sold at \$2 to \$3.50 for culs and common grades up to \$4.60 to \$5 for good to extra natives, rams selling at \$2.50 to \$3.50. Not many sheep went over \$4.00, western rangers selling largely at \$4.15 to \$4.50. Ewe sheep brought \$3.50 to \$4, being heavy in weight. Lambs that were not choice sold badly, much higher than a year ago. At the present time lambs are declining, and the best sell at \$6.40. The horse trade has been fairly active, sales being on a larger scale than is usual at the mid-summer season. Of course, the volume of business was much smaller than several weeks ago, and the absence of the recent government demand for cavalry and transportation horses was an important feature. In quite a number of instances horses of a medium quality had to be disposed of from \$5 to \$10 per head lower than a week earlier, but prime animals sold about as high as at any time. Drivers were salable at \$65 to \$90; drafters at \$90 to \$175; chunks at \$60 to \$105; southern chunks at \$25 to \$55; farm chunks, weighing 1200 lbs at \$45 to \$70, and general purposes horses at \$20 to \$65.

NEW YORK LIVE STOCK.

New York, July 25.—Beef.—Receipts 3,800 head. Demand moderately active; steers steady to 10c lower, bulls and cows 25c lower. Native steers \$4.50 to \$5.40, Texans \$4.60, oxen and stags \$2.75 to \$4.75, bulls \$2.90 to \$3.50, cows \$2 to \$3.75. Calves lower; cattle 10c to 11 1/2 c. dressed, refrigerator beef 9c. Exports today none.

Calves.—Receipts 4,235 head. Market demoralized, prices 50c lower. Veals \$3.50 to \$5.50, choice to extra \$5.75 to \$6, buttermilks \$3 to \$3.25, no westerns.

Sheep and Lambs.—Receipts 16,907 head. Demand active, sheep barely steady, lambs 10 to 25c lower. Sheep \$3 to \$4, no very prime lots here; lambs \$4.50 to \$6.25 mainly \$4.75 to \$5.75.

Hogs.—Receipts 10,000 head. Steady at \$4.25 to \$4.50.

PORK PACKING AND PROVISIONS.

The Cincinnati Price Current reported 410,000 hogs packed in the West last week against 360,000 the preceding week, and 300,000 the corresponding week last year. Total from March 1 to date, 8,380,000, against 7,220,000 a year ago; increase over last year, 1,160,000. Prices closed about the same as preceding week. September pork closed in Chicago at \$9.95 against \$9.90 the week previous, and \$7.55 a year ago. Exports of pork and bacon for the week 13,109,000 lbs. against 15,712,000 last year; lard, 5,134,000 lbs. against 10,428,000 a year ago.

The preliminary returns to hand this week for June exports admit of a close approximation of the total clearances of product for the year ending June 30, and the record is one which surpasses any previous year, for both meats and lard, and also in the total valuation. Compared with the preceding year there was a gain of 36,000,000 pounds in hams, 153,000,000 pounds in bacon, 21,000,000 pounds in salted pork—making a total gain of 210,000,000 pounds for meat product, the aggregate reaching 942,000,000 pounds against 732,000,000 the preceding year, and 855,000,000 as the previous high record, in 1890. The increase in exports of lard is somewhat remarkable, 139,000,000 pounds—the total reaching 707,000,000 pounds, or 2,142,000 tierces. The value of all exports of hog product the past year was \$110,000,000.

Compared with a year ago prices of hogs average 25 to 30 cents per 100 pounds higher, and are now yielding good returns for the feeders.

MARKETS BY TELEGRAPH.

CHICAGO, July 25.—Wheat, No. 2 red, 75c.—c. No. 2 corn, 34 1/2 c. No. 2 oats, 24 1/2 c. No. 2 rye, 45c. No. 2 barley, f. o. b., 31 1/2 c. No. 1 flaxseed, 96c.—c. Prime timothy seed, \$2.55. Mess pork, \$9.90 to \$9.95 per bbl. Lard, \$5.55 to \$5.57 1/2 per cwt. Cheese, 7 1/2 c. Eggs, fresh, 11c. Butter, creamery, 13 1/2 to 17.

LIVERPOOL, July 25.—Wheat, No. 2 red western winter, 6s 8 1/2 d; corn, 3s 2 1/2 d; flour, St. Louis fancy winter, 9s 0 d; pork, prime medium western, 51s 3 d; prime mess, do., 48s 9 d; lard, prime western, 28s 0 d; cheese, American finest, 37s 6 d.

The Wool Record and Textile News, New York, is published on Tuesday, and this prevents agricultural papers generally from using its reports the same week. In its July 19 issue it says: Sales of wool for the week amounting to nearly 6,000,000 pounds, and for last week aggregating nearly 5,000,000 pounds in the three seaboard markets, are a strong indication of returning prosperity. These figures are no indication of normal conditions. The total sales in a healthy market should aggregate very much more. These dealings represent almost exclusively demands for the fulfillment of government contracts. Foreign markets continue to show unusual strength. The western situation is unchanged. Manufacturers are seeking supplies, but hesitate to deal very generally at present prices. A few large sales have been reported, but they are exceptional. Territories, as usual, are really the feature. The market is gaining strength, surely and steadily. Tendencies toward better prices are constantly growing stronger, and the views of western growers seem justified. Their confidence in higher prices has not been misplaced.

Miscellaneous.

THE FARMER'S BOYS. A Ballad of the War.

BY T. C. HARBAUGH.

I own I'm rather lonely for my help has gone away,
The harvest time is over and cut is all the hay;
And I long to get the papers, but I fear to see them come,
For Tom and Jack are fighting to the music of the drum.

The boys are patriotic, like their father long ago
When he heard the call of Lincoln and went forth to meet the foe;
And when they came to me and said that they were young and strong
I told my wife I knew the farm would never hold them long.

There's Jack; he has his mother's eyes, his face is round and fair,
He has his mother's gentle ways, her soft and silky hair;
And Tom; they say he looks like me, raw-boned, and tanned and stout,
The kind of boys, the captain says, to storm the strong redoubt.

I saw the thing a-brewing but I had no word to say
The boys grew restless for they read the papers every day;
And when the call for men was made they hurried down the lane,
And in the village joined the boys who'll ne'er "forget the Maine."

And that is why I run the farm today almost alone,
And why my good wife turns away to hide a mother's moan;
For Jack has gone to Dewey, where the Spanish squadron lay,
And Tom is where the battle is, by Santiago Bay.

My wife and I together sit when all the work is done,
And watch the hills in silence as they reddened with the sun;
She knows that I am thinking of the boys we've sent afar,
And she is praying silently for peace to end the war.

They'll never shirk their duty; Tom and Jack are true as steel;
Before their might, I'm proud to say, the Spanish foe will reel;
What tales will Jack bring back with him from regions far away,
And Tom will tell of fighting down by Santiago Bay!

The horses seem to miss the boys, there's sorrow in their eyes,
The help I've got they do not like and look at with surprise;
I'd like to tell the critters where the two boys are today—
One in the Philippines and one by Santiago Bay.

Old glory will not blush for them; they'll nobly wear the blue;
They won't disgrace the good old farm; to country both are true;
I told them when they started, as I held their hands in mine,
That I was once a soldier in the grand old Union line.

When I lead the horses homeward through the bracing twilight air
I see two boys in uniform, heroic, tall and fair;
And one looks like his mother when I wooed her long ago,
And the other's like his father, with his curious ways, you know.

It seems they're with me all the time, but yet they are afar;
Upon their bayonets doth fall the light of tropic star;
They know the old farm misses them, no matter where they roam,
And every night I know they think of mother's face and home.

We pray together, wife and I, we kneel before the throne,
And ask the Father's care for those so dear to us alone;
May we hear from lips we long to kiss, though now they're far away,
The story of Manila and of Santiago Bay.

THE PHILIPPINES.

BY B. M. B.

These islands which are attracting such general attention at the present time, lie in waters between the Pacific ocean, China sea and Sea of Celebes, between 4 and 20 degrees N. latitude, extending 10 degrees from east to west. The number of islands, great and small, is variously estimated from 1,000 to 1,400. The largest of the group is Luzon which has the same area as Ohio, the capital is Manila, the principal seaport of the islands. Other seaports worthy of mention are Iloilo and Zebu on islands of the same names nearly in the center of the archipelago.

Spain in the sixteenth century reached the zenith of her greatness and led the European nations in progress and military power. It was in her day of prosperity that the Portuguese navigator, Magellan then in the employ of Charles V of Spain, fired by the recent discovery of a new world,

reached the conclusion that there were other worlds to conquer. The ambitious king listened to the suggestions of Magellan and fitted out a squadron for him, with which he set sail in 1519, and two years later touched at the island of Mandanao, the southernmost of the Philippines, and a month later lost his life on the neighboring island of Zebu. The religious attitude of an explorer of that period is shown in the fact that the first duty performed by Magellan after landing was to build an altar where mass was celebrated, in which all of the members of the squadron assisted.

A complete Spanish occupation followed the discovery of the Philippines, and a particular aid to their influence over the islanders was found in splendid accompaniments of the ceremonial of the Roman Catholic church. The islanders showed a willingness to accept a God, who was full of pity for His children, in place of their own divinity, whom they regarded as a hostile power, using the forces of evil to work their destruction, as in the inundation, the tornado, the earthquake and the volcanic eruption.

It was the tyranny, the cruelty and oppression of subsequent years that changed the first impressions of Christianity received by the aborigines, as well as caused the decay of the military and political power of the island possessions of the Spaniards.

The country has been under Spanish control through nearly four centuries, with the exception of two years, when captured by the British, but was restored in 1764 on the payment of a million pounds sterling. From that date until the victory by Dewey, the country has been under the rule of civil and military governors, although the real power has rested with the archbishop, who outranks the governor-general. In many ways the Spanish are childish and absurd; for instance, it was until recently the custom for the archbishop in order to show his superiority over the civil rulers, to walk over the Spanish flag on each Sunday, though he was a Spaniard himself and entirely dependent upon that nation.

The population at the present time is estimated at from 10,000,000 to 15,000,000; many of the smaller islands have never been visited by any civilized men, and a computation of numbers is largely guesswork. The original inhabitants, the Negritos, are black and dwarfish; they have the flat noses, thick lips and black, frizzled hair of the Negro. They seem to be good examples of the Darwinian theory, as they possess remarkable prehensile power in their toes. They are nomadic, and live entirely upon the natural productions of the land and sea.

There are supposed to be about 25,000 of these aborigines left, scattered in the most inaccessible parts of the various islands, having been driven before the advancing Malay tribes.

The Tagales are the most important as well as most numerous tribe, the estimate placing them at 2,000,000. They live in the lowlands, building their houses upon piles driven into the water. They are a well developed race, with strongly marked features, having some negro characteristics. They are largely engaged in agriculture, devoting much attention to rice as the principal article of food. They raise cattle and fowls for domestic purposes.

American visitors to the islands speak particularly of the Igorcotes, a tribe which shows traces of Chinese and Japanese admixture; savage in appearance they are industrious and very successful in agriculture. They build artificial terraces upon the hillsides, and show remarkable skill in the construction of irrigating canals, and also excel as miners and metal workers. They have some rigid ideas concerning morality; they are monogamists, divorce is unknown and infidelity is severely punished.

The Japanese and Malays and Chinese are numerous upon many of the islands, while there are many small tribes, known and unknown. The Chinese have their usual thrift and have the most important part of the trade and banking business under their control. There are possibly eight or ten thousand Europeans living there. It is a conglomerate population, which might require much skill in governing.

The northern islands lie in the region of the typhoons, one of the characteristics of the tropics. Earthquakes are not infrequent and violent thunder storms are of almost daily occurrence during the early summer months. There are but three seasons; the cold extends from November to March and is enjoyed by the foreigners; the winds are from the north, the air is cool and bracing and though no fires are needed light woollen garments are worn in comfort. During the hot season from March to June the heat is most oppressive; the wet season lasts from July to November and is ushered in by heavy torrents of rain, the low lands are flooded and often disastrous inundations occur.

The productions include the various fruits common to those tropical regions. Rice is the staple food and though extensively cultivated the supply is rarely equal to the demand. On some of the higher lands wheat is grown, while both sweet and Irish potatoes, peas and other vegetables can be readily produced, but are not cultivated to any great extent.

The Spaniards have done little towards developing the natural resources of the islands where they are the most numerous and in full power. One writer says: "They are not a very enterprising people and have preferred collecting taxes and exacting fines to delving and digging for the treasures of the mines." The Philippines are rich in minerals; there are extensive coal fields, while iron, copper and deposits of gold have been found in sufficient quantities to warrant commercial activity.

The productions of the greatest commercial importance at the present time are tobacco, Manila hemp, sugar cane, coffee and cocoa. The rigid restrictions of the Spaniards have crippled the commerce of the islands. Tobacco was made a government monopoly in 1781 and remained so until 1882. Any person might raise the crop but only the government could buy it, and as the debt was often unpaid for years, great inconvenience resulted. Nor was that all; in certain districts the peasants were bound to furnish a stipulated quantity of the leaf, thus forcing the laborer, under severe penalties, to devote himself to tobacco culture when more profit might have been realized from another crop.

The Manila hemp requires little of either labor or capital to grow and manufacture it; the plantations are small, each one being the property of an active family.

Coffee was introduced there about one hundred years ago, and is highly esteemed in various countries of Europe. The sugar cane is cultivated extensively, and a violet-colored variety produced at Panay, is said to afford a sugar unrivalled in the markets of the world. It is also claimed that the sugar product might be doubled by scientific methods in its manufacture. Most of the sugar plantations are monastic property and are leased out to Chinese half-breeds, who are far more successful than the natives.

The governor-general is supposed to have supreme power, but for forty years he has been assisted by a "junta of authorities." Among the members the archbishop stands first, followed by the commander of the forces, the admiral and president of the supreme court. There is a central junta of agriculture, industry and commerce. The taxes are high, varying from the poll tax of \$1.17 upon each native to \$2.50 to the Spanish and other European half-castes. The press is under civil and ecclesiastic control, and discussion of Spanish or even general European politics is strictly forbidden.

Monks and friars are an important element in the social and political life of these islands. The Franciscans and Dominicans have taught the natives all that they know of various useful arts, particularly agriculture. It is through ecclesiastical influence that schools have been opened in nearly every settlement, many of them under the control of nuns and sisters of charity. Though the standard of education is low, there is no question but the convents and monasteries, with all the possible shortcomings of individual members, have been centers from which some knowledge and a certain degree of civilization has radiated to the benighted barbarians.

The foreign trade has always been subjected to great fluctuations, owing to various causes of which the unsettled condition of the country is an important one. The imports to the United States have steadily declined during the past ten years, from \$10,000,000 in 1888, to 4,000,000 in 1897; the value of the exports in the same time has decreased from \$165,000 to \$94,000.

There may be a great future in store for these beautiful and productive islands, if they are blessed by a protective administration, where intelligence in government, enterprise in commercial pursuits, with efforts for the development of the best traits of character among the natives, combined with a practical religion for every day use, with an abundance of humanity in spirit as in word might be some of the agents employed in "shedding light upon those who sit in darkness."

In all the thought of the future of the Philippines, it is well to remember the wild tribes that are hidden away in the mountainous districts, and in the heart of the many islands yet unexplored, who may stand ready to dispute the right of any nation to take possession of lands which they hold by right of occupation. That these islands are a garden to be cultivated seems a truth as well as another evident one, that the slow progress made under the colonial system of

Spain seems to demand a change to more enlightened methods.

An enthusiastic writer in one of our June monthlies, who speaks confidently of these islands "as the materials to be used in our great colonial experiment," also says: "The gems of the Pacific are as yet rough diamonds, and the cutting is going to be harder than the acquisition."

A MOUNTAIN CAMP.

Imagine a beautiful green spot nestling down by the side of a rushing river among the mountains, away from all sounds except those of nature, the birds, the sweet breath of the pines and wild flowers wafting gently through the valley, clouds tinged with gold and lined with silver, seeming to touch the tops of the peaks, a cool breeze blowing gently through the trees and you have our camp at

NIGHT.

The forest's voice is hushed to music's whisper,

On mountain tops gleam shafts of pearly light;

The river makes sweet music among the boulders,

Deep shades creep farther up the pine-crowned height.

Faint sounds a slumbrous song among the roses,

A crooning lullaby on summer's breast;

A breeze sighs softly through the woodland cloisters,

A wild bird twitters on its fledgling's nest.

Strange incense burns in marble-chaliced lilies,

Dim silver stars keep watch from purple towers,

A radiant moon lights earth with rare enchantment,

And night flings jewels to the drowsy flowers.

We climbed over the rocks up stream for about a mile yesterday and fished back to camp, catching 28 speckled beauties, one of them weighing 31 ounces. Trout fishing is hard work, but genuine healthy sport, and anyone with a particle of spirit would certainly enjoy it. It requires skill, patience, a true eye and plenty of practical experience to cast a fly to the right spot, perhaps 35 feet away and over a rock or between the bushes which line the shore. One must be willing to climb over the rocks, logs and through the underbrush, wear strong, heavy, high-topped boots or shoes, endure fatigue, wet feet, scratches and the chance of being bitten by a rattlesnake if he desires to become a successful angler in the mountains. The rattlers are quite plenty here, but we do not fear them as they always give warning and we wear boots that they cannot bite through. We have the rattles, eleven and a button, taken from a large fellow over four feet long and as large around as a good sized wrist, killed day before yesterday on one of our fishing trips.

What would some of our Ohio friends think of climbing a hill 34 miles long? Such a long pull requires horses accustomed to the mountains and an experienced driver, or there is little left of the team if it succeeds in arriving at the summit. The road from Longmont, Col. to Estes Park is 34 miles long and all up hill. It is a hard drive with a light load. Still it is well traveled in summer, as a beautiful cool, delightful spot, with the river Thompson winding through it, draws the hot dusty traveler to enjoy its pleasures, as the flowers do the bees.

Some of these mountain roads leading to private ranches, or fishing points, would surprise and astonish the average eastern man, fill him with wonder and dismay at the way a "native" rides or drives over the rocks and logs, up and down the mountains at a speed that would make a "tenderfoot's" hair stand up, and cause the cheeks of a woman—also of many men—to turn white with fear and dizziness. It costs considerable money, labor and patience to build these roads, but the toll demanded soon pays the builder a good profit. For instance, they charge \$2.50 for driving 20 miles over some of them.

Stock of all kinds is looking splendidly. Cattle bring a good price and the rancher who has a lot of them to sell is correspondingly happy. Very few hogs are raised here because this is not a corn country, on account of the cold nights. Horses are a drug on the market. Unless a colt promises to develop into something above the average, it is frequently killed, while any kind of a calf is tenderly cared for. We expect to move camp about a hundred miles northwest of our present location, probably next week. When located will tell you something about the surroundings.

—W. H. Lawrence, Lyons, Colo., June 25, 1898.

The Poultry Ward.

For The Michigan Farmer.

INFLAMMATION OF THE CROP.

Mrs. H. L. R., of St. Johns, Mich., writes that her chicks are troubled with some disease which she cannot account for. The first symptom, she says, which is noticeable is a swelled or enlarged crop, and the hens mope around, yet they will eat until they are almost dead. She also says that at times their combs are very red, and at others they are pale. These fowls have fever, or inflammation, of the crop. In treating the birds she should slightly adulterate the drinking water with nitric acid and mix a half teaspoonful of sal volatile with each bird's food every morning. Also give onions chopped fine, mixed with the food everyday for several days, then wait a few days and repeat.

Our correspondent says she feeds corn and oats scalded, and asks if sour milk is good for chicks if fed raw or had it better be scalded. Also if she should feed whole corn once a day. With the exception of the corn and oats we should say she feeds all right. We do not feed oats ground as the chaff is of so great an amount that we think it does more harm than good. We feed whole corn at night to all chicks large enough to swallow it. As to the sour milk, we wish we had more to feed than we have. We feed it once a day, all they will eat up. We feed it raw, as it is good enough any way. We like it scalded but we have never had any harm come from feeding it raw, so we still feed it in this way.

As to the potion she says she has been feeding, we would not think of giving it to our fowls. We cannot see where any of the articles mentioned in the potion is of any value to a sick bird. In treating sick birds one should be careful to see that the sick ones get the benefit of the treatment, and this cannot be done except the birds to be treated are shut up where they can be seen to at any time.

Another thing of great importance is good clean drinking water, which should be had at all times. The water which fowls have to drink sometimes is enough to make them sick, and we should see to it that they have all the fresh pure water they want. We have raised hundreds of chicks this season, and the death rate has not been 1 percent. The deaths, or most of them, were caused by accident. The main thing in raising fowls is to feed good wholesome food and good clean water, and nature will do the rest.—C. L. Hogue.

For The Michigan Farmer.

GAPE IN CHICKENS.

I had struggled for years with this trouble, tried hundreds of alleged remedies, turpentine, assafetida, cresote fumes, sulphur, lime dust, etc., when a good farmer's wife gave me a simple preventive, viz.: 1 teaspoonful of powdered copperas, dissolved in water and mixed with the morning feed, for 100 chicks, to be given every morning. If you have fewer chicks, reduce the quantity of copperas in proportion but be sure to give it every morning until they are large enough to be out of danger. This requires some trouble, and is not recommended to cure those already affected.

I had lost some 60 young chicks, and not a house upon them; the coops were clean, and I was at a loss to find the cause. An article printed in the poultry department of The Farmer enlightened me. The cause and cure were made plain and I afterwards proved their truth by experience, and feel sure all will see the reasonableness of the cause. The common earthworm, or as we call them, angle or fish worms, are subject to parasites. Some scientist discovered that on ground that had been long used for fowls the worms were infested with the same sort of parasites that are found in chicken's windpipe, while on ground that was often plowed or that had not been used for poultry runs, the worms were free from parasites. Hence chicks eating the worms would also get the parasites, and soon begin to gape. The preventive is to have the yards plowed or spaded deeply, semi-annually. The cure is not as easy, but I treated hundreds of chicks before I got every square inch of their runs free from diseased angle worms.

I prepared a number of wing feathers from adult fowls, by stripping the web of the feathers from all except the end; this makes a soft brush, with the center stiff enough so you can push it into the bird's windpipe without bending. I dip this feather in sweet oil, into which has been mixed one drop of turpentine to each teaspoonful of oil, then I grasp the chick's head with my left hand,

holding the mouth open and the feet and legs firmly between my knees, I generally do the job at night, having a strong light facing me. Looking down the throat I can see the windpipe open and shut as the bird breathes. With the oiled feather in my right hand, I push it down the windpipe from two to three inches, according to the size of the chick. I then give it a quick turn, pinch the windpipe slightly, and push up until I reach the throat, drawing out the feather. The knot of worms generally follows or the chick soon sneezes it out. The oil and feather loosens its hold on the windpipe and in nine cases out of ten the cure is immediate. The operation can be very quickly learned and not oftener than once in a hundred times will the chick be injured. If, after a few days, the bird continues to gape, repeat the operation, making sure that you hit the windpipe instead of the passage to the crop. Always treat the chicks as soon as gaping begins, as after a time the lungs become affected and treatment cannot avail.

I have doctored chicks for years for less fortunate neighbors, after I had learned how to prevent the disease in my own yard. Gravelly soil seems to be comparatively free from diseased worms, while stiff clay soil abounds with them. I have not looked up the scientific name for the tiny white worm found in the chick's windpipe, but the naked eye can see two heads to each body. The Farmer also stated that the same worm affected lambs and other domestic animals, causing various diseases of the respiratory organs. This one article in my agricultural paper has been of great value to me. I have cured hundreds of chicks by this method and prevented the disease in thousands in the twelve years that have since ensued. I was about to give up the business in despair, and I wish to help others who may be troubled with this pest. Farmers' wives, read the poultry page and profit thereby.—Priscilla Plum, Reading, Mich.

For the Michigan Farmer.

SHELTER FOR YOUNG STOCK.

If a person has in hand a healthy, vigorous growth of growing broods, considerable attention must be paid to housing during the summer and fall months, and particularly the latter. I have never been much in favor of allowing the chicks to go into the regular poultry houses until the very last thing in the fall, preferring that they should be allowed the better and fresher quarters outside to a comparatively close and stuffy hen house, especially when it is necessary for them to hover on the floor. In the great majority of cases it is better to provide some suitable shelter outside to protect them from occasional storms and hard winds.

One of my first broods of chickens that came out this year, between sixty and seventy in number, were placed in a brooder by themselves where they remained until liberated from their yard. For the first few weeks they were allowed to return to the brooder at night; but as soon as it became warmer I closed the brooder and made them seek their nightly shelter beneath. As the brooder sets on legs, some ten or twelve inches from the ground, and one side is enclosed by the slanting run, this has made a most excellent place for them; especially since a board was placed along one side for a little more protection, making two sides almost entirely enclosed. This temporary arrangement has answered a good purpose, being easily moved and sufficiently protected, but still plenty of fresh air. With such an arrangement it should be moved at least once a week, two or three times would be much better. If it is not convenient to move occasionally, boards placed beneath will answer a good purpose; it will be found to be an advantage if the boards are painted over with kerosene after they are cleaned each time.

A dry-goods box can be made to answer a good purpose if properly cared for. If it is inclined to leak, the difficulty can be easily remedied by arranging a temporary roof of some tarred paper or any good quality of building paper. If neither of these are at hand a piece of duck can be used to shed water sufficiently to serve the purpose.

As a rule I am not very favorably inclined towards roosts for young chicks; if they are allowed to roost too early it is almost sure to cause them to have crooked breasts, which in pure breeds causes them to be disqualified. If roosts are used at all, I would recommend that boards about four inches in width be used. They are sufficiently broad so that the chick rests on them rather than roosts, and the consequent danger of deformity is not so great. In some respects these wide perches will be preferable to the floor or the ground, as there is less danger of crowding, and far better chance

for a good ventilation—a very important feature.

Of course in suggesting the above arrangements, I am working on the supposition that there are no rats, skunks or other vermin about to destroy the youngsters. If these pests exist, an entirely different arrangement will be in order. In such a case they will have to be more thoroughly constructed so that they will be vermin proof, consequently more care must be taken for plenty of air; and lastly, cleanliness must not be lost sight of.—C. P. Reynolds.

Apiarian.

SELLING COMB HONEY.

I think it advisable for farmers who keep a few stands of bees to make a specialty of comb honey only. It will hardly pay to go to the expense and trouble of getting necessary appliances to produce extracted honey, although it is very nice to be able to supply customers with whatever they want. Some prefer the liquid honey and if one can work up a good trade on extracted honey it will be found to be much more profitable to produce than comb honey. I seldom extract any honey because my customers do not want it. Now that comb honey has got to be so cheap the trade in the liquid article is a thing of the past.

In disposing of my crop in the past I have nearly always found it more profitable to retail it. Last year was an excellent one for bees and the product was fine. I had no trouble at all in disposing of several hundred pounds in a retail way, from one to twenty-five pounds, making a slight reduction on the large lots. My honey was all engaged before the season was over, and I could easily have sold a thousand pounds more.

One great advantage in the retail business is that everybody finds out who you are and what your business is, and if you put an honest article on the market, in an attractive form, your customers will expect you around every year, and should you fail to get around they will often write or come to see you.

But many farmers are somewhat backward about the retail business. I am too, if I have a poor article to sell. But I retail my honey, therefore I put forth every effort to have the product all as nearly first-class as possible, thereby making what is really a double profit out of it. Then it is a delight to slick up and get in behind a nice fat horse in a good buggy and go trotting off to market with two or three hundred pounds of fine honey put up in nice crates so it can readily be seen, and it will thoroughly advertise itself.

Hit the grocer or hotel man the first thing. Make known your business at once. Show your honey and guarantee its purity and after a short talk if he is afraid to buy, try to get him to handle some on commission. If you fail, try another, and so on until you succeed. If you are active and full of business it won't be long until you will have a crowd of curious people about you asking all sorts of questions about your bees. I always answer them very kindly and give them an invitation to come and see my bees. They will very frequently buy a few pounds apiece before the grocer can make up his mind about taking any. He sees the interest manifested in your business by the people and he finds they will buy, so he usually takes a crate or two.

If I fail to do any business I leave a

few crates with the groceryman to sell on commission, in the meantime doing my best to drum up a trade at private houses. It is sometimes a little difficult to get the business started, but it is bound to succeed after awhile.

A nice article put on the market in an attractive form is bound to sell if the price is right. I have found it the best selling by-product the farm produces. After your trade is once established it is no trouble to hold it, if you deal fairly with the people and treat everyone alike. Label your sections with your name and address and a guarantee and after awhile your business will become thoroughly advertised.—E. S. Mead.

Niagara Falls Excursion via Michigan Central.

Two trains will start from Detroit Thursday, August 4th, one at 9:00 a. m., the other at 10:30 p. m., composed of fine coaches, parlor and sleeping cars for the Falls via the Michigan Central, making a quick run. Round trip rate from Detroit \$3.50. Correspondingly low rates from other points. Tickets good for five days. See any local agent Michigan Central, or address Jos. S. Hall, M. P. A., M. C. R. R., Detroit.

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and easily tilled. No rocks and stumps. All grains and fruits that succeed in other states in same latitude flourish there. The climate is well-nigh perfect, the air being dry and free from malaria. An abundance of pure water is found. It is a great state for stock raising and feeding. **There is no state in the Union where a hard-working farmer can do so well.** Thousands of poor men have become rich in Nebraska. Farms can now be bought on easy terms. Prices are low. A handsome illustrated pamphlet describing Nebraska will be sent free on application to P. S. EUSTIS, General Passenger Agent, Chicago.

Grange Department.

Our Motto:—"The farmer is of more consequence than the farm, and should be first improved."

Address all correspondence for this department to

KENYON L. BUTTERFIELD,
AGRICULTURAL COLLEGE, - - - MICH.

News from Michigan Granges is especially solicited.

THE JULY TOPIC.

We hope that many Granges will at their last meeting this month discuss the July topic suggested by the national lecturer. The subject is "Grange objects and methods"—one of the greatest interest and value to every Grange. We hope also that correspondents will report promptly the result of the discussion. We publish in this issue a splendid article by Worthy Master Horton, showing one phase of Grange work; we intended to publish it last week, but it was crowded out.

TO LECTURERS OF POMONA GRANGES.

For the convenience of Lecturers of Pomona Granges, we shall provide in the Grange department, so long as it may be used, a GRANGE CALENDAR, in which we will print the dates of the following meetings:

- 1.—Pomona or district meetings.
 - 2.—Union Grange meetings or picnics.
 - 3.—Dates of trips of deputy lecturers, organizing deputies, and State officers.
- Send in dates of these meetings just as soon as you know them, and we will leave them standing until after the meeting is over. Please do not send dates of Subordinate Grange meetings.

SPECIAL.

Our Grange news column has so far been quite satisfactory. But it has been weak in one point—we do not have enough reports of Pomona Grange meetings. We have about 25 Pomona Granges in this State, each of which meets from two to ten times a year. At these meetings the very best of Grange programs are presented.

Now, for the balance of the year, may we not be furnished with a report (of not over 300 words) of every Pomona meeting, giving in the briefest possible space the gist of what was said and resolved upon at the meeting?

AUGUST PIONIOS.

THE MASTER OF THE NATIONAL GRANGE IN MICHIGAN.

The schedule of dates arranged for Hon. Aaron Jones, master of the National Grange, is as follows: Gilead, Branch Co., Saturday, Aug. 20; Barry Co., (place not yet named) Monday, Aug. 22; Mancelona, Antrim Co., Tuesday, Aug. 23; Ionia, Ionia Co., Wednesday, Aug. 24; Ann Arbor, Washtenaw Co., Thursday, Aug. 25; Rockford, Kent Co., Friday, Aug. 26; Berrien Springs, Berrien Co., Saturday, Aug. 27.

In arranging these dates it has been necessary to change from several requests regarding days, etc. Other complications arose which made it necessary to arrange the route different from that which may look more direct on the map. As time is precious with Bro. Jones it is desirable to use every day he can be with us and the schedule is so arranged.

Now let every locality take up the work in earnest and do such thorough advertising and so arrange details that the greatest possible success may follow. Remember all this will not come about by chance. It requires effort and concerted action by all interested.

Brother Jones is an earnest and interesting speaker and can and will do a work beneficial and lasting for the good of the Grange in the respective counties.

Do not let him meet any small audiences; at each and every place do the preliminary work so that the people in attendance will be numbered by the thousands.

Hand bills well distributed over large territory, reading notices in all local newspapers and arrangements for special rates and trains on railroads, are but part of the essential work. Special committees for each part of the work is the way to get down to business.—Geo. B. Horton.

GRANGE NEWS.

POSTAL JOTTINGS.

Montcalm Grange—Montcalm Co.—July 9, the exercises were patriotic. We also observed Flora's day with a beautiful program and adornments furnished by Flora. We received 600 pounds of

twine but too late for use this season, as the order had been overlooked; but it will be kept till next season.—J. M. Parkhurst.

Union Grange, No. 97—Branch Co.—July 13, meeting was rather small but interest splendid; quotations were responded to. Arrangements were made to hold a Ceres festival the latter part of August, and to invite all to attend.—F. Ella Kilbourn.

Clayton Grange, No. 694—Genesee Co.—July 16, conferred fourth degree on two. The Grange saved its members within a few cents of \$200 on binder twine this season. Question box at next Grange.—George W. Bloss.

Portland Grange, No. 174—Ionia Co.—bought 100 pounds of Paris Green early in the season and saved nearly 100 percent in so doing. Bought 3,500 pounds binder twine and are more than satisfied. Voted to take a vacation until September 16.—Geo. W. Peak.

Quincy Grange, Branch Co.—since last report has added several more members, entertained Pomona, and met regularly every two weeks. Your correspondent has just completed twenty rounds of wire fence bought under Grange contract and it is satisfactory in every particular. I can heartily recommend it to every Patron.—T. H. Cook.

THE BAW BEESE ASSEMBLY.

The time has been set for Wednesday, August 17th. The program will be one of the most complete ever given by this immense gathering. The Lake Shore railroad will run trains at less than one-half fare from six different directions. These excursions starting from Lansing, Jackson, Ypsilanti, Tecumseh, Monroe, Sylvania, Fayette, Adrian, Angola, and White Pigeon make the assembly cheaply available to all the people—Patrons, farmers and all in the counties of Monroe, Washtenaw, Jackson, Lenawee, Hillsdale, Branch, St. Joe, Calhoun, Eaton, and Ingham. These counties may have local picnics but they should not prevent the people from attending Baw Beese. Bills will be sent to all Granges in these counties and committees should be appointed to see that they are well distributed.—Geo. B. Horton.

METHODS OF CO-OPERATION IN THE GRANGE.

BY GEO. B. HORTON, MASTER STATE GRANGE.

I am asked to write a short article on the above stated question. Co-operation is the foundation upon which all parts of Grange work are built and through which they are prosecuted. It is the bottom, the center, and the top of every principle advocated in the Declaration of Purposes of the Order of Patrons of Husbandry.

Then the first lesson every Patron must learn is how to co-operate with his or her associates in the Grange for the promotion and carrying out of the principles and the attainment of the objects of our order. Ah, yes, how easily said, but experience demonstrates how hard to do.

Co-operation may be defined as the act of thinking, planning, and working together for the same object or mutual benefit. Naturally, we are all selfish, sometimes envious and jealous. We want it our way or not at all. If we cannot rule we try to destroy. Co-operation contemplates concession to the rights and wishes of others. The person that cannot concede gracefully cannot co-operate successfully. It is the privilege of all members of the Grange to try and influence others to their ideas of methods, if after mature thought the plan seems to be best for the Grange, but a cheerful compliance should follow an adverse decision.

"In non-essentials charity, in all things unity," is very fitting in considering this question. A Grange is none other than a family on a large scale and the same general principles must govern its acts as characterize the government of a happy and prosperous family, all of which is summed up in true co-operation—each striving to do for and assist the others.

The downfall of every unsuccessful Grange may generally be traced to a few selfish, stubborn and maybe mischievous members who did not possess the true desire and genius to co-operate with their associates in carrying out the work of the Grange.

So much for my subject on general principles. But the idea of the editor was that I should give some thought regarding

SPECIFIC FINANCIAL CO-OPERATION, buying and selling. As to the right, both legal and moral, there is no doubt that people singly and collectively may sell in the dearest and buy in the cheapest market to be found, be it near or remote. In this respect the farmer is

no different from other men. There is no justice or reason in the theory that the world's opportunity to bargain and sell are for a special few, while the farmer must operate in a fixed space. No one ever doubted the full right of a merchant to cultivate fields, and raise fruit if he so desired. From a commercial standpoint the farmer is under obligations to one dealer over another, be it far or near, only to such an extent as the one may offer the best bargains compared with the other. In short the market places of the world are open to the farmer the same as to other men, and the person who advocates differently, be he farmer or merchant, is too ancient for this progressive age. Thanks to the light and knowledge shed upon us through organization whereby the farmer is fast learning of his rights and duties and to know that he is the peer of any man and may appropriate and take for his benefit all that which is legally and morally free to others.

It is a duty every farmer owes himself, his family and community that he husband well all opportunities for success in his business. The social standing of himself and family very much depends upon his success financially. He must have sufficient leisure for reading and thought. His children must have liberal education and he must contribute to the various movements for the general good of his neighborhood. Every farmer should aim to be successful. To be free from debt and live midst comfortable and refined surroundings. To be successful means not only to cultivate well but to give thought to the selling and buying, to the end that earnings from the fields may be the more, and that the expending thereof shall provide the most possible from the markets and opportunities of the world of those essentials of which I speak. It is

ONE OF THE CHIEF OBJECTS of the Grange to encourage its members to act intelligently along these lines. The early methods pursued by our organization in seeking to better its members financially, although serving the purpose but a day, did very much good in bringing producers and users into closer acquaintance and in creating a demand for more direct trade. From the experiences of the past we are now working slowly but safely into a system of direct buying which has superior advantages and none of the disadvantages of the old Grange store plan. The present plan contemplates no stocks carried by the Grange, no wastes and no losses by odds and ends left on hand. We now deal with manufacturers who solicit our trade on the direct plan. We select the trades people with whom we wish to deal and through true co-operation the members transact their business greatly to their benefit.

The recent deal in binder twine, although embarrassed by adverse conditions from first to last, saved to the members of our order in Michigan not less than \$10,000 and probably much more, and this is but a single case. It is a good illustration of what can be done by taking a single article and presenting it to the Grange in detail form for purchase. The same can be done with many other things and it is the plan to be followed in the future. Patrons must learn business patience and be governed by reason in all these transactions. Do not look for perfection or unreasonable things in Grange deals of this character. All deals have to be arranged by some human being like yourselves and all that can be done is to do the best

possible under the circumstances. This work is new to Michigan and we have much to learn. If we co-operate, our system of trade contracts now so well commenced may be made of untold value and furnish to the farm families of Michigan millions of dollars which they may use for their general improvement, socially, intellectually, financially and influentially.

To get the best results from financial co-operation each Grange must elect to office such members as will encourage the work and give thought to all trade contracts, to the end that each in due season may be placed before the members in a detailed form so that each can see just how and what to do to make purchases through the different contracts. In each Grange some member or members must bring up the matter of purchasing particular articles and then follow it to positive action. All notices of contracts with details of terms and conditions should be kept and studied by every Grange secretary so as to be as familiar as a salesman in a store of everything purchasable and the price.

There is not a Grange in Michigan but can if it will so conduct this feature of Grange work that all their members will feel and know that Grange membership pays, not only from a social and educational, but from a financial standpoint. How many Granges are there in Michigan that will fail in this respect? It is hoped but few.

Michigan Agricultural College. PRES J. L. SNYDER, Agricultural College, Mich.

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I have a large number of wheels which I wish to dispose of before the season ends, and in order to do so will sell off the entire lot at prices away below actual cost to manufacture. If you are going to buy bicycles, tires or sundries cheap this is the chance of a lifetime. Write for particulars. The prices will simply astonish you.

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Horticultural.

SMALL FRUITS IN 1898.

The fruit grower is proverbially hopeful. He has great faith in the goodness of God and the bountiful provision of nature, His handmaid. We had hoped that the low prices of 1897 might not be repeated this year and that we might reap an adequate reward for our labors. In this we were at least partially disappointed. As far as I can learn prices have, however, been slightly higher than last year.

The most hopeful feature, however, and the one which promises most for the future, is the greatly increased demand. This is due, no doubt, to several causes. The low prices and the larger number of people who are employed both contribute to this end.

Beyond this is the indisputable fact that people are coming to realize that it is cheaper as well as pleasanter to patronize the fruit grower rather than the druggist and physician.

I have the wholesomeness of fresh fruits impressed upon my mind very vividly each season by an object lesson (a "field test" our friends of the experiment station would call it) of six or seven weeks' duration. I usually employ from fifty to one hundred pickers in gathering strawberries, cherries, currants and raspberries. They are boys, girls and women of all ages, and many of them are not accustomed to outdoor work, many of them coming directly from the schoolroom. And yet among the number of persons who are working hard in the blazing sun of June and July for six days in the week the percentage of sickness is surprisingly small, much less than if they had continued their usual avocations. The outdoor employment may contribute somewhat toward this, but I feel certain that the main factor is the fresh fruit which they consume in an amount limited only by their conscience and their capacity!

When passing through the city market and viewing the fruits and vegetables from a distance which were picked when half-ripe and "travel-stained and weary" from their long trip, I wonder that the city consumer retains any desire for such things.

If we are not getting rich very fast we at least have the satisfaction of knowing that we are furnishing profitable and healthful employment to many who would otherwise be idle. Possibly some of us may feel, however, that charity should begin at home.

One of our pickers, a hard-working German, the mother of a large family of small children, realized this matter of health. She said to my wife not long since: "We have had no doctor's bills to pay since we began picking berries." (This was six or eight years ago.) They take a part of their pay in fruit during the glut and store up a great deal for winter use.

The strawberry crop developed nothing specially new. Among the newer varieties Carrie and Cobden Queen were very satisfactory. Wm. Belt did better than usual.

As the May Duke cherries began to ripen the warm wet weather caused the rot to spread very rapidly so that a large portion of the crop was lost from this cause. I have heretofore found this variety quite profitable, having a small orchard (about 50 trees) on a sandy knoll. It is a variety that is not hardy enough to admit of general planting, however, and if it were, the market would not take a large quantity of cherries at that time—the early part of the strawberry season. We used to suppose that the earliest fruit always sold the best, but this rule does not always hold good. I find for instance that the Dyehouse cherry is too early to sell well in our market, as it comes just when the market is glutted with strawberries. It is a hardy and productive variety and very similar to Early Richmond but a week earlier. Montgomery, which follows Early Richmond, is one of the best varieties. In fact if I were limited to one variety for home use or market I would select this. English Morello is another valuable variety. I have found Olivet worthless, however, on account of its lack of productiveness, although a very fine cherry. I had one tree which had been planted in good soil for 18 years and had made a fine growth but had not yielded two bushels of fruit altogether in the eighteen years, so it was grubbed out. I have two more that have been planted eleven years and neither of them has ever yielded a quarter of a crop; so they also will be taken out. The price for cherries was not high but was quite remunerative and the demand was unusually brisk.

The raspberry crop was very abundant but prices a little better than last year.

In blackcaps, Eureka again led all others by a large margin both as to quality and yield per acre and price per bushel. Conrath is an excellent variety. Lotta and Munger are rivals of the Gregg and both did very well for me this season. The sensational new blackcap "Pride of Cumberland" is making a fine growth and judging from the reports heard from the fruit I expect to have some fine specimens next year.

In red raspberries the demand has been good and prices for King for early and Loudon for late make a pair that is hard to beat. I have grown about all the red raspberries introduced in the last twenty years but this pair stands at the head.

I am not quite satisfied with our method of picking raspberries, which is to pick them in shallow baskets holding four quarts, strapped to the waist of the picker. When the basket is full it is emptied into quart baskets. This requires time and an extra handling of the berries which does them no good. I think next year I will have some shallow baskets made of such a shape that they will hold four quart-baskets and when they are filled they can be at once placed in the crate.

Currants have not yielded much profit. They are, however, a very convenient crop to handle as they can be left on the bushes several weeks after ripening (this is especially true of Victoria) and picked when time offers or the market demands them.

This season has impressed upon my mind more firmly than ever before the fact that there are two distinct methods of conducting the small fruit business profitably. We may call them the retail and the wholesale system. The former is adapted to smaller farms near a good market and pays a larger profit per acre or per individual than does the wholesale method. In retailing, the producer and consumer meet and the producer receives all that the consumer pays and not merely what is left after the express company and the commission merchant and grocer have deducted their share.

The wholesale method corresponds more closely to the factory system which has become so universal in the world of manufactures. Like the manufacturer, the wholesale fruit grower must strive to reduce the cost of production to its minimum by the use of the cheapest obtainable labor, the most effective machinery and the most approved methods of culture. Surrounding conditions must aid one to determine which branch he will choose.—W. W. Farnsworth.

TRUCK FARM NOTES.

Conserving Moisture.

In July and August, when the sun evaporates moisture from cultivated soils very rapidly, how to conserve moisture in the soil is a subject in which all are interested. The plan of conserving moisture by an earth mulch made by frequent cultivation may be the best one in growing farm crops, but for the gardener who practices an intensive system, and who plants so closely that large quantities of water are required, the moisture that can be conserved by an earth mulch is not sufficient for the needs of the plants. During a drouth of two weeks in August, I have had plants wilt to the ground, although an earth mulch was kept around them.

I suppose that every one who cultivates the soil has noticed the difference in soils as to absorbing and retaining moisture—that gravelly and sandy soils rapidly lose moisture after a rain, when exposed to a hot sunshine, and that loamy soils full of humus retain moisture for a longer time. Water soon percolates through a gravel bed, but a well drained loam full of humus absorbs and retains water like a sponge, and under the right treatment conserves a constant supply of moisture for the use of the growing plant. Water is the vehicle that makes soluble and conveys the plant food in the soil through the structure of the plant; hence the plant cannot make a large growth without an adequate supply.

Few people realize the large quantities of water needed in hot dry weather to supply the loss from evaporation and the transpiration of plants. An ordinary plant leaf contains 10,000 pores to the square inch. Through these pores the plant is constantly transpiring in hot days of sunshine, and in a closely planted field the water pumped up from the soil through the roots by this process is two to four pints of water per square foot in 24 hours, or from 50 to 100 tons per acre.

This is in addition to the water which the soil loses by evaporation and percolation; hence we see the importance of conserving all the moisture the soil gets from natural sources, as rain, capillary attraction and the atmosphere, and sup-

plementing it if circumstances permit by irrigation.

Mulching.—Irrigation.—Even with the very best soils the gardener who plants closely must, late in the summer when the plants are large, to obtain the best results, use means of conserving moisture, or providing more than the soil gets from its natural sources. From my experience in irrigation on my own farm, I have learned how to economize in the use of water by mulching or shading the surface of the ground.

I am now irrigating a field of celery. It is planted in alternate rows one and two feet apart. The wide space between the rows is mulched with coarse manure and the plants are large enough to shade the surface between the narrow rows. A revolving sprinkler moved so as to go over the field once a week, keeps the ground sufficiently moist, while a part of the field with the surface exposed to evaporation needs sprinkling every day. In a word, the lessons learned are, fill the soil with humus to enable it to retain all the moisture possible, give frequent cultivation during the early part of the summer, then where practicable mulch the surface not shaded by the plants. I find it more economical to apply manure in this way for a mulch and to keep down weeds, and after getting this use of it, it remains in the soil to furnish plant food the next year.

Cover Crops.—Now when the early garden crops, such as peas, early potatoes, corn, etc., are being removed, if a late crop does not follow this year, some catch crops should be used to cover the ground. Where it survives the winter sown crimson clover, and it will save a part of your fertilizer bill next year. My old strawberry beds that are not planted to cabbage and celery will be immediately plowed and seeded to crimson clover; also the ground that has grown early celery and cabbage, and I shall sow it between the rows of my later crops. On my rich garden soil when the weather is favorable it makes a large growth, and saves me hauling many loads of stable manure. Crimson clover should not be sown later than August in my locality, for it must make considerable growth in the fall to go through the winter well. Later than August I know nothing better than rye to sow for a cover crop. It may not furnish the soil as much nitrogen when plowed under in the spring, but it is safer to sow late in the fall, as it is a more hardy plant than clover. Nature's plan is to keep the soil covered, and unless we grow some useful plant to cover it she will cover it with weeds. Ground that is covered during the winter with clover or rye does not lose any of its fertility, its mechanical condition is improved by plowing them under and plant food is supplied in the cheapest way.—W. H. Jenkins, Delaware Co., N. Y.

HORTICULTURAL QUESTIONS.

"I send you under separate cover a blackberry, with foliage, for identification. It grows with a straight upright cane, having a very peculiar and dense foliage. It is immensely productive and very early."—N. H. T., Arcanum, O.

It is the Early Harvest, quite a well known variety. I do not wonder that Mr. T. is enthusiastic concerning it, for when seen at its best it is really wonderful, both because of its prolificacy and unusual beauty; besides it is very early. It is not sufficiently hardy, however, and is too small for market purposes, which explains why it has not become more popular. The Early King is only a few days later but it is larger, more hardy and of better quality, hence there is no longer any place for the Early Harvest.

"One of my neighbors has a field which is infested with wild horseradish. He has repeatedly cut it off and the field has been in cultivation for several years but the horseradish still thrives. Would like to know how to get rid of it."—P. J. H., East Liberty, O.

If the plants are not too numerous they may be killed with salt or petroleum, if freely used, but thorough cultivation, so as to allow no growth of foliage, is better. It is a very hard plant to kill and it may take several seasons of persistent cutting, and the use of salt as well, to accomplish the desired result.

"I have some budded peach trees which I bought several years ago. They are fine thrifty trees and bloom profusely but bear no fruit, while other trees in the same orchard bear abundantly. Please tell me through The Farmer what to do with them to cause them to bear."—J. W. R., West Va.

There are several causes of unfruitfulness and it is hard to say which one is operating in this particular case, but I suspect that the fault is with the variety. It is not possible to make any suggestion as to treatment without knowing the cause of the trouble. It would be well,

if possible, to determine the name of the variety and if it belongs to the unfruitful class there remains nothing to do but to destroy the trees.

PERIODS OF PAIN.

Menstruation, the balance wheel of woman's life, is also the bane of existence to many because it means a time of great suffering.

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WHEAT AND FERTILIZERS.

Once more the golden grain has been gathered into shock and the result of the work has been pleasing. Last fall while many sections were fairly well supplied with moisture others did not have enough rainfall to germinate the bulk of wheat sown, and it passed into winter in very unfavorable condition. I can truthfully say that some that went in on Maple Valley farm was of little credit when the seeding was completed, from the fact that drouth made a neat job out of the question, so we just hogged it in the best we could.

The first seeding was done on a clay loam on the 15th of September with seven pecks of clean graded seed and 200 pounds of medium grade treated bone containing 16 percent of available phosphoric acid with less than one and a half percent potash. The ground was oat stubble and was one of the stubbornest pieces of soil we ever undertook to subdue and prepare for seed bed in an unprecedented season of drouth, and the result was that it came up uneven. A portion of it was top-dressed that had a peculiar strain of sterility though we have not practiced top-dressing for years as a rule. Yet this portion aided by the 200 lbs. fertilizer put on it gave greater vitality to the plants than the balance of the field showed and the stand of clover is most excellent wherever any of the manure was placed.

Four acres of potato soil put in cheaply the 25th of September and October 8th show no difference in quality or time of ripening with no fertilizer used—all good with good stand of clover sowed twice, first in early March and again in the middle of April.

Failing to get six acres of clover second growth turned under, six acres of corn ground was drilled in with 200 lbs. of a slightly higher grade of fertilizer nominally, a phosphate which rated high in phosphoric acid and about 3 percent of actual potash.

We watched a neighbor put in a field of corn stubble by first cultivating the soil, cutting the stubble, raking them up and hauling them off, harrowing the ground, then drilling. That was too much labor for us, so when the corn in our field was ready to cut we started two men cutting twelve rows wide. First cultivated the shock rows after sowing them with wheat, but no fertilizer was used on them.

After the cutters were far enough ahead the drill was started and set to put on 3½ pecks of wheat and 100 lbs. fertilizer and the soil double drilled as gone over. The stalks were cut down during the winter and double sowed with clover, as was the potato soil. The shock rows failed to show up but when cutting this week the blocks between the shock rows was as fine headed and thickly standing wheat as we have ever cut on the farm and right beside it last year a field made 36 bushels per acre, yet we can hardly expect any such yield owing to the shock rows being inferior. This tract of land was one that has been clovered and manured for years and of course the phosphate is not responsible for all the good work done on this season's crop. Attached to this last tract was an acre of new ground that had no fertilizer nor ever has had, but clovered and manured. This acre showed a fine stand of grain during the coming year but the relative lack of phosphoric acid in this tract greatly reduced the vitality of the straw; also the stooling at the roots was not half so great as where the phosphate was used.

The straw went down badly and what did stand was badly straw broken and all of it plainly showed from the size and compactness of the heads that rich new ground may be deficient in a well balanced ration of plant food. We cannot keep up the absolute supply of phosphoric acid with manures and clover when an average ton of manure contains 10 lbs. nitrogen, 5 lbs. phosphoric acid and near 13 lbs. of potash, and clover 40 lbs. nitrogen, 11 lbs. phosphoric acid and 37 lbs. potash.

For a number of years we have been supplying our soil with the great deficiency in phosphoric acid by using along with our large supply of manure and growth of clover a cheap grade of fertilizer. We recognized the fact that to get our fertilizer cheap we must drop out practically all the nitrogen and potash and ultimately get considerable treated South Carolina rock in it. It mattered little where our phosphoric acid came from as long as it was in soluble form and not too much "reverted" material in it. Our price for fertilizers has ruled at from \$16 to \$21 for several years and last year from the \$16 article we got simply splendid results and can't see but what our best this year may be from an \$18 article, though we used some costing \$21. This year we have ordered one brand containing 14 percent available phosphoric acid and 1½ percent potash, costing us \$15, by way of trial, but

will place the bulk of our order at near \$18 until we are certain that the cheaper article is all our soil needs.

Possibly farmers reading this article may be influenced to purchase these cheaper fertilizers and use them on soils that should have a more expensive article used on them. Unless soil has had years of rotary experience with clover and manures to increase the nitrogen and potash, it would be unwise to put fertilizers on them that contained a large percent of phosphoric acid alone; for with little available nitrogen and potash in the soil to unite with the phosphoric acid, such outlay would be only heaping coals of fire on one's patience and pocketbook. Therefore the farmer who knows that his soil has not been manured and well clovered for a term of years should purchase a fertilizer that contains a nearly complete formula of, say, 3 to 4 of ammonia, 10 to 12 of available phosphoric acid and 3 to 4 of actual potash, and with the thorough application of manures and turning under of clover develop from soil and air slowly the necessary percentage of nitrogen and potash, noticing well the effect upon his crops.—Geo. E. Scott.

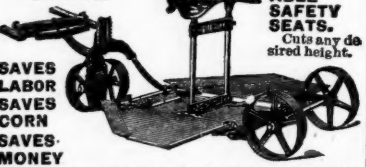
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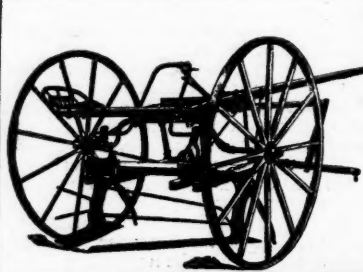
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